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OPENING DOORS
to the
TRADES AND TECHNOLOGIES

A Workshop for Career Advisors

Access Initiatives Branch
10th Floor, CityCentre
10155 - 102 Street
Edmonton, Alberta
T5J 4L5
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Alberta
CAREER DEVELOPMENT
AND EMPLOYMENT

Opening Doors to the Trades and Technologies
A Workshop for Career Advisors

was developed by

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For Alberta Career Development and Employment

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OPENING DOORS TO THE TRADES AND TECHNOLOGIES

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Opening Doors
to the
Trades and Technologies

MAIN SECTION

INTRODUCTION

It is the intent of Alberta Career Development and Employment to pursue policies and program initiatives to promote equality of opportunity for all Albertans of working age. The Access Initiatives Branch of Apprenticeship and Trade Certification was created in March, 1988, to assist apprentices and potential apprentices who belong to disadvantaged groups, in participating in apprenticeship training in Alberta. These groups -- women, Aboriginal peoples, persons with disabilities, visible minorities, immigrants, youth, and the older worker -- have traditionally not been well represented in the trades and technologies.

The primary objectives of Access Initiatives are to develop policies and programs to promote the increased participation of disadvantaged groups in the trades, and to provide special needs apprentices with appropriate support services for successful participation in the Apprenticeship and Trade Certification program. The particular focus of Access Initiatives is to address barriers to employment, to promote awareness of career options in the trades, and to develop bridging initiatives facilitating entry into the trades.

This 12-hour workshop was designed as a professional development instrument for career advisors. It focuses on broadening knowledge of: the trades and technologies, disadvantaged groups, demographic and labour market trends, barriers to training and employment, and strategies for overcoming barriers. This workshop will provide career advisors with the opportunity to fine-tune their knowledge and skills in order to be more effective in assisting people who are experiencing disadvantage in the workforce.

BACKGROUND

The original direction and focus of **Opening Doors to the Trades and Technologies** was set by Alberta Career Development and Employment in October 1988. The Instructor's Guide was developed by Carlson Consulting Ltd., and was presented for approval to the Department in January 1989. Two pilot workshops, consisting of participants from a cross-section of career advisors from community organizations, government and educational institutions, were held in Edmonton and Grande Prairie in February 1989. After evaluation, minor revisions were made. From August to November 1989, twenty-one workshops were held across Alberta. Three hundred and twenty career advisors attended the workshops.

By assessing workshop evaluations and through individual discussion with participants, it was noted that the needs of career advisors varied according to their backgrounds. In general, the participants fell into two groups: **1)** those whose main objective was to acquire an overview of the trades and technologies; and **2)** those who wanted in-depth information on the trades and technologies and the barriers faced by disadvantaged groups. This group also wanted to spend more time on identifying and implementing strategies for overcoming barriers.

The direction of the revised **Opening Doors to the Trades and Technologies** has been determined largely by the insight and involvement of workshop participants across Alberta.

CURRICULUM OVERVIEW

The Instructor's Guide for **Opening Doors to the Trades and Technologies** is designed to assist instructors in guiding career advisors to broaden their knowledge of the trades, technologies, the labour market and demographic trends, disadvantaged groups, and barriers to training and employment. This guide contains a comprehensive selection of materials, exercises, and resources intended to be used as a flexible instructional tool for participants from a wide variety of settings.

Opening Doors to the Trades and Technologies can be adapted for use with career advisors in educational institutions, business, community-based organizations, industry and government departments. The focus and emphasis of the workshop can take different directions dependent on the needs of the participants. Although there is a basic workshop outline identifying main sections and topics, instructors are encouraged to adapt the outline and its contents by making changes to meet the needs of the participants.

To facilitate selective usage, two summary outlines are provided:

Summary Outline A To be used if the group is comprised of individuals with limited knowledge of the trades and technologies, having some background in working with disadvantaged groups. The emphasis of the workshop should be on the trades and technologies.

Summary Outline B To be used if the group consists primarily of individuals who have a general knowledge of the trades and technologies. The focus should be on *detailed* information on the trades and technologies, and on identifying strategies for working with disadvantaged groups.

The emphasis and focus of the workshop should always be oriented in response to the unique group of individuals attending. To accomplish this, the guide should be used as a resource from which to draw the most appropriate materials and activities for each group instructors work with.

To facilitate usage, the workshop is divided into topics. The section topics are as follows:

1. **Introduction**

   Clarification of the rationale and direction of the workshop.

2. **Trades and Technologies**

   Broadening knowledge of job options and functions, entry requirements, programs, and opportunities.

3. **Trends**

   Examination of the labour market, synopsis of trends, and issues surrounding disadvantaged groups.

4. **Barriers**

   Emphasis on increasing awareness of stereotypes, and barriers faced by individuals who are disadvantaged in the workforce.

5. **Strategies**

   Focus on brainstorming, assessing, planning and implementing strategies to remove barriers.

6. **Conclusion**

   Summary of key points and evaluation of workshop.

USE OF GUIDE

Opening Doors to the Trades and Technologies is designed to be as flexible as possible to meet the differing needs of each workshop participant group. (See Page 3 for details on the two Summary outlines). For this reason, the guide contains a great deal of information, probably more than will be used during any one workshop.

The **Main Section** of the workshop, contained in **pages 1 to 34**, is the core of the teaching material, covering the six major workshop topics (*Introduction; Trades and Technologies; Trends; Barriers; Strategies; Conclusion*).

Each of these six major topics is laid out in two parts. The first part outlines the *Objectives*, *Preparation*, and *Time* requirements for the topic, and the second outlines the teaching *Guidelines* and *Notes* for that topic.

The **Main Section** should be the focus of the individual workshop instructor's preparation for the session. The organization of all other materials in the guide, including Handouts, Transparencies, Instructor's Notes, etc., is laid out in the **Main Section**.

The Appendices contain handouts, instructor's notes, photocopies of transparencies, occupational profiles on the technologies, pre-workshop information, and a resource list.

- **Participant handouts** have been collected in **Appendix A**.
- **Instructor's Notes** are contained in **Appendix B**.
- Photocopies of **Transparencies** are in **Appendix C**.
- **Occupational profiles** of some areas in the technologies are in **Appendix D**.
- **Pre-workshop information**, which includes a brochure for informing potential participants of the nature and content of the workshop, and a resource list identifying videos, resource materials and posters, is in **Appendix E**.

WORKSHOP OUTLINE

1. Introduction

Instructor welcome and introduction
Purpose and objectives
Participant introductions
Career, occupation, and job
Traditional/nontraditional occupations
Disadvantaged groups

2. Trades and Technologies

The Alberta Apprenticeship and Trade Certification Program
- Introduction to apprenticeship
- Apprenticeship trades
- Apprenticeship system
- Trades related programs

Technologies
- Technology/High Technology
- Technicians/Technologists
- Opportunities in the technologies
- Training for the technologies

Demands forecast for trades and technologies

3. Trends

Demographic and labour market trends

Disadvantaged groups

4. Barriers

Sex/role stereotypes

Attitudinal barriers

Generic and specific barriers

5. Strategies

Identifying strategies

Implementing strategies

6. Conclusion

Summary and evaluation

. INTRODUCTION

Objectives

1. To identify by name and build a sense of the various human resources present.
2. To provide each participant 'air time', encouraging participation from the start.
3. To outline the purpose and objectives of the workshop.
4. To define career, occupation, and job.
5. To explore the terms traditional/nontraditional occupations
6. To identify the disadvantaged groups: Aboriginal peoples, women, persons with disabilities, youth, visible minorities, immigrants, and older workers.

Preparation

1. Prepare 'Welcome'.
2. Prepare questions on flipchart for 'Meeting Each Other' exercise.
3. Prepare lecture notes on terminology.

Time

Summary Outlines A and B: One Hour

Time	***Topic***
9:00 a.m.	***Welcome and introduction***
9:05 a.m.	***Workshop purpose/objectives***
9:15 a.m.	***Participants' introductions***
9:30 a.m.	***Career, occupation, and job***
9:35 a.m.	***Traditional/nontraditional occupations***
9:50 a.m.	***Disadvantaged groups***

Guidelines	Notes
Instructor Welcome and Introduction	
- Introduce yourself, stating your name, qualifications, and background.	
- Inform participants of parking, coffee, smoking, washrooms, lunch, and any other housekeeping details.	
Purpose and Objectives of Workshop	
- Outline the purpose and objectives of the workshop.	-Use transparencies: #01 Purpose. #02 Objectives.
Participants' Introductions, 'Meeting Each Other' Exercise	
- Ask participants to pair up with someone whom they have not previously met, and to introduce themselves to each other. Refer participants to questions on flip chart. Provide 3 x 5 inch cards for taking notes/name cards.	-Sample questions: 1. Job title, organization and responsibilities. 2. Background information: ie., training, education, work history. 3. Personal workshop obectives.
- Have participants reassemble in a large group. Ask each person to introduce their partner to the group.	-You may want to take notes on each participant to help you remember each one. Often this information is useful in lectures, exercises and discussions.
Career, Occupation and Job	
- Distribute handout #01 **Glossary of Terms** for participant reference.	-Emphasize that for some individuals who are disadvantaged in the workforce, it is very difficult to visualize long-term career goals, when their immediate needs are in the present.
- Outline the use of these terms in the career counselling process.	-Use transparency #03: Career, occupation and job.

Traditional/Nontraditional Occupations

- Elicit from participants examples of traditional/ nontraditional jobs for individuals who are members of a specific disadvantaged group. Compile answers on flipchart.	-Examples: Traditional jobs for aboriginal men include fishing, hunting, trapping, fire fighting, ranching, and short-term labourer such as construction and forestry. Nontraditional jobs include a wide variety of occupational areas of which the trades and technologies are a part. Traditional jobs for women include clerical, nursing, teaching, sales clerk, and the majority of low-paid and skilled jobs in the service industry. The trades and technologies are considered nontraditional for women.
- Pose the question "What does the term 'nontraditional occupation' mean to the majority of individuals who are members of a disadvantaged group?".	-Answers will include "I can't do that, it is man's or woman's work". "I don't know anyone who is doing that type of work." "I am not a trail blazer."
- Outline disadvantages of use of term 'nontraditional' in career counselling process.	-The term 'nontraditional occupation' may create assigned cultural/sex role disadvantages which can limit occupational choice.
- Define the term 'nontraditional occupation'.	-Basic information should include: * Nontraditional occupations for women used to be those that employed less than 10% females. In October, 1984 this definition was changed to any occupation in which 1/3 or fewer workers are female (Employment and Immigration Canada).

* Determination of nontraditional occupations is based on the statistics from the latest census, therefore, the list of nontraditional occupations will vary from region to region.

Disadvantaged Groups

- Outline the implication of membership in a disadvantaged group.

-Emphasize that individuals in disadvantaged groups experience barriers and discrimination.

- Define the disadvantaged groups: Aboriginal peoples, women, persons with disabilities, youth, visible minorities, immigrants and older workers.

-Refer to Handout #04 for definitions of Status/Non-Status Indians, Metis, and Inuit.

-Utilize the following transparencies:
#04 Disadvantaged groups.
#05 Aboriginal people of Canada
#06 Persons with disabilities.
#07 Visible minorities/ immigrants.
#08 Older workers/youth.

2. TRADES AND TECHNOLOGIES

Objectives

1. To clarify job options and functions, entry requirements, training and programs related to the trades and technologies.
2. To identify actual and projected skill shortages in the trades and technologies.

Preparation

1. Review 'instructor's notes' to prepare lecture material.
2. Contact resource people to obtain local and provincial actual and projected skill shortages in the trades and technologies, (e.g., Employment and Immigration Canada, Alberta Career Development and Employment, Chambers of Commerce, community organizations and industries).
3. Read newspapers and magazines to increase awareness of labour market information. Photocopy relevant articles to supplement handouts.
4. Obtain copy of video '*Hands On*'.

Focus on Trades and Technologies - Summary
Outline A: Two and a half hours

Time	Topic
10:00 a.m.	Introduction to apprenticeship
10:05 a.m.	Apprenticeship trades
10:30 a.m.	STRETCH BREAK
10:45 a.m.	Apprenticeship system
11:20 a.m.	Trades related programs
11:30 a.m.	Technology/High Technology
11:35 a.m.	Technicians/Technologists
11:45 a.m.	Opportunities in the technologies
12:00 p.m.	LUNCH
1:00 p.m.	Training for the technologies
1:10 p.m.	Demands forecast for trades and technologies

Focus on Strategies: Summary Outline B: Two hours

Time	Topic
10:00 a.m.	*Introduction to apprenticeship*
10:05 a.m.	*Apprenticeship trades*
10:15 a.m.	*Apprenticeship system*
10:30 a.m.	*STRETCH BREAK*
10:45 a.m.	*Apprenticeship system (continued)*
10:55 a.m.	*Trades related programs*
11:05 a.m.	*Technology/High Technology*
11:10 a.m.	*Technicians/Technologists*
11:15 a.m.	*Opportunities in the technologies*
11:30 a.m.	*Training for the technologies*
11:40 a.m.	*Demands forecast for trades and technologies*
12:00 p.m.	*LUNCH*

Guidelines	Notes
The Alberta Apprenticeship and Trade Certification Program	
- Distribute handout #02 **A Guide to Apprenticeship.**	- Distribute resource material Apprenticeship Opportunities and Alberta's Apprenticeship Program for more detailed information on regulations and trade descriptions. - Refer to detailed information in Instructor's Notes #02: **The Alberta Apprenticeship and Trade Certification Program.**
*Introduction to Apprenticeship	
- Brief overview of the background and philosophy of apprenticeship.	- Refer to instructor's notes on *Historical Development and Philosophy of Apprenticeship* to prepare overview. - Other points you might include: *With about nine percent of Canada's population, Alberta trains twenty-five percent of Canada's apprentices each year. *Various studies have shown that Alberta's apprenticeship training system has responded more accurately to short-term business cycles than others in the country.
*Apprenticeship Trades	
- Identify 53 designated trades.	- For further clarification, they can be defined as trades frequently associated with construction, service or mechanical industries.
- Clarify qualification/ proficiency trades.	- There are 53 designated trades - 49 apprenticeship and 4 certification trades.

	- The following have no formal apprenticeship training programs: Tool and Die Maker, Projectionist, Plasterer, and Elevator Constructor.
*Apprenticeship System	
- Explain how apprenticeship works and the requirements and procedures for becoming an apprentice.	- To summarize key elements of system, use video "*Hands On*", (13 minutes). - It is important to mention that individuals having a limited knowledge of the written English language may be allowed to attempt a journeyman exam with the aid of an interpreter or reader. The interpreter may not be connected in any way with the trade in question. - Trades in which candidates must write entrance exams: Boilermaker, Instrument Mechanic, Ironworker, Plumber, Sheet Metal Worker, Sprinkler Systems Installer, Steamfitter-Pipefitter. - For detailed information on time or technical training credits from high schools, colleges or technical institutes refer to instructor's notes on *Accreditation*.
- Clarify the Interprovincial Standards Program and the Journeyman Certification Program.	- Refer to instructor's notes on *Interprovincial Standards Program* and the *Journeyman Certification Program* for further information. - Every year in Canada, at least 10,000 individuals qualify for interprovincial certification.

- Outline composition and functions of Apprenticeship and Trade Certification Board and Local/Provincial Apprenticeship Committees.

- For reference material, use instructor's notes on *The Apprenticeship and Trade Certification Board* and *Local/Provincial Apprenticeship Committees.*

*Trades Related Programs

- Identify trades related programs and the Journeyman Updating program.

- Refer to instructor's notes on *Trades Related Programs* and the *Journeyman Updating Program* to prepare presentation.

Technologies

- Distribute handout #03 **A Guide to the Technologies**.

- You may wish to distribute booklet Leading Force which contains information about Alberta's labour force, government, research institutes, universities and lifestyle. This information is directed towards employers who are involved with advanced technologies.

*Technology/High Technology

- Clarify the terms 'technology' and 'high technology'.

- Technology is the application of scientific breakthrough to improving products or processes or to the development of new products and services.
- High or advanced technology is a catch phrase that refers to the most recent applications of research in the information, biological and physical sciences, especially where these applications use machine or artificial intelligence to extend our manual and intellectual capabilities.
- Alberta has more than 1,000 advanced technology companies, employing about 50,000 individuals.

*Technicians/Technologists

- Clarify the duties and training of technicians and technologists.

- It is important to clarify that there are no clear-cut rules for the definition of technician and technologist.
- ASET, the Alberta Society of Engineering Technologists, is at present the only provincial organization which reviews and formally certifies the training and experience of engineering technicians and technologists.

*Opportunities in the Technologies

- Identify job options, eductional programs and institutes.

- For expanded information on training programs, refer individuals to resource Post-Secondary Education Programs. It is available from Learning Resources Distribution Centre, Alberta Education, 12360 - 142 Street, Edmonton, Alberta, T5L 4X9.
  Telephone: (403) 427-2767.
- To assist in answering questions on duties and qualifications about specific jobs, refer to **Appendix D Occupational Profiles**. Advise participants that they can receive occupational profiles by contacting the Career Information Hotline at Zenith 22140.

*Training for the Technologies

- Identify general entrance requirements and procedures to access training in the technologies.

- Refer participants to Post Secondary Education Programs for specific academic or personal entrance requirements for particular programs.

Demands Forecast for Trades and Technologies

- Distribute *Labour Market Trends and Human Resource Issues*, as well as any relevant print media clippings.

- Identify local, provincial, and national actual and projected skill shortages in the trades and technologies.

- Refer participants to 'Demands Forecast for Trades and Technical Occupations' in *Labour Market Trends and Human Resource Issues*.

- If time permits, you may wish to discuss the following:
  *Are our schools adequately preparing young people to enter the trades and technologies?

  *Are we still training people for jobs which are slowly going the way of the dinosaurs?

3. TRENDS

Objectives

1. To increase awareness of demographic and labour market trends, and their impact on the client and the career counselling process.

Preparation

1. Review Instructor's Notes #02 to prepare for presentation.
2. Obtain copy of the video "Women in Construction-The Tomorrow Builders".
3. Contact resource people to obtain demographic and labour market trends (ie., CEIC, Career Development and Employment, community agencies and organizations).
4. Read newspapers and magazines to increase awareness of trends and issues. Photocopy relevant articles to supplement handouts.

Time

Focus on Trades and Technologies - Summary Outline
A: Two hours and 30 minutes

Time	Topic
1:30 p.m.	**Demographic and labour market trends**
1:50 p.m.	**Aboriginal peoples**
2:05 p.m.	**Women**
2:30 p.m.	**Persons with disabilities**
2:45 p.m.	**STRETCH BREAK**
3:00 p.m.	**Visible minorities and immigrants**
3:20 p.m.	**Older workers**
3:40 p.m.	**Youth**
3:55 p.m.	**Summary and wrap-up**

Focus on Strategies - Summary Outline B:
Two hours and 15 minutes

Time	*Topic*
1:00 p.m.	*Demographic and labour market trends*
1:20 p.m.	*Aboriginal peoples*
1:35 p.m.	*Women*
2:00 p.m.	*Persons with disabilities*
2:15 p.m.	*Visible minorities and immigrants*
2:30 p.m.	*STRETCH BREAK*
2:45 p.m.	*Older workers*
3:00 p.m.	*Youth*

Guidelines	Notes
- Distribute handout #04 **Trends**.	- All information in this section is in Instructor's Notes #02 **Trends**.
Demographic and Labour Market Trends	
- Brief presentation on demographic and labour market trends. Outline major issues and challenges facing career advisors.	- Refer to instructor's notes on *Demographic and Labour Market Trends* for information. Main points should include: *Natural population growth is declining. *Composition of workforce is changing. *Shift from resource to knowledge-based economy. *Shortcomings in our educational and training systems.
	- Utilize the following transparencies: #09 Demographic and labour market trends #10 Alberta's population distribution, 1966. #11 *1986. #12 *2006. #13 The middle aging of the labour force.
- For statistical information, refer participants to 'Labour Market Trends' in *Labour Market Trends and Human Resource Issues*.	- Participants may have misconceptions about what industries constitute the service sector. Refer to instructor's notes on *Goods-Producing and Service-Producing Sector* for information. In general, the trend is for continued expansion and growth in the service-producing sector, particularly in its knowledge-intensive and highly skilled industries.

Disadvantaged Groups

* Aboriginal Peoples

- Identify trends, and outline major issues and challenges facing career advisors.	- Refer to instructor's notes on *Aboriginal Peoples* for information for presentation. Main points should include: *25% of the new labour market entrants in the 1990's. *High unemployment rate. *Overall lower education and skill levels. *Occupational segregation. *Rural to urban shift. - Utilize the following transparencies: #14 Aboriginal Peoples. #15 Aboriginal apprentices in Alberta.
- For statistical information, refer participants to 'Natives' in Labour Market Trends and Human Resource Issues.	- It is important to recognize conceptual limitations of census labour market information regarding aboriginal peoples. Statistics Canada's definition of labour force participation and unemployment were formulated in concert with other industrialized nations and are relevant under conditions of a well-developed labour market. These definitions are not fully appropriate for aboriginal peoples who pursue a traditional way of life or live in remote communities. In addition, the isolation of the areas where some aboriginal peoples live discourages active job search, and thus they may not be counted among the unemployed and for population figures.

* Women	
- Outline trends, and outline major issues and challenges facing career advisors.	- Refer to instructor's notes on *Women* in preparing presentation. Emphasize: *Steady, strong increase in labour market participation. *Occupational segregation. *Wage gap. *Social issues. - Transparencies to include in presentation: #16 Women. #17 Percentage of women in Alberta's labour force. #18 Occupational grouping of women in the labour market. #19 Female journeymen in Alberta. #20 Female apprentices in Alberta. #21 Occupational grouping of female apprentices.
- Refer participants to 'Women' in Labour Market Trends and Human Resource Issues for statistical information.	- It is extremely important to note that the majority of female apprentices and journeymen are in the service trades, namely beautician, barber, baker, and cook. - You may wish to show video "*Women in Construction - The Tomorrow Builders*". (13 minutes).
* Persons with Disabilities	
- Identify trends and outline major issues and challenges facing career advisors.	- Use instructor's notes: *Persons with Disabilities* to prepare presentation. Main points should include: *Substantial proportion not in labour force. *High unemployment rate. *Gaps exist regardless of sex, age, or educational attainment. *Attitudinal barriers. *Unfounded myths.

- Incorporate the following transparencies into presentation:
  #22 Persons with Disabilities.
  #23 Separating fact from fantasy.

- For statistical information. refer participants to section 'Persons with Disabilities' in *Labour Market Trends and Human Resource Issues.*

* Immigrants and Visible Minorities

- Outline trends and identify major issues and challenges facing career advisors.

- Refer to instructor's notes on *Immigrants/Visible Minorities*
  Emphasize:
  *Changing immigration patterns.
  *Underutilization of skills and education.
  *Attitudinal barriers.
  *Occupational grouping.

- Use transparencies:
  #24 Immigrants and visible minorities.
  #25 World areas 1977.
  #26 World areas 1987.

- Refer participants to section 'Visible Minorities and Immigrants' in Labour Market Trends and Human Resource Issues for statistical information.

* Older Workers

- Outline trends and identify major issues and challenges facing career advisors.

- Utilize instructor's notes on *Older Workers* to prepare information for presentation.
  Emphasize:
  *Workforce is aging.
  *Myths and realities.
  *Innovative human resource planning and training essential.

- Distribute booklet *In Praise of Older Workers.*

- Use transparency:
  #27 Older workers

- For statistical information, refer to 'Older Workers' in *Labour Market Trends and Human Resource Issues.*	
* Youth	
- Outline major issues and challenges facing career advisors.	- Refer to instructor's notes on *Youth* for information. Main points should include: *Proportion of youth in the workforce is declining. *Immigrant age structure is young. *Young aboriginal population. *Concerns about inadequate educational preparation. - Use transparencies: #28 Youth. #29 Youth share of the labour force. - 17% of all high school graduates were considered functionally illiterate by the Southam News Report on Literacy. It is important to point out that all immigrants unable to speak either official language, and aboriginal peoples living on reserves were not included in the study.
Summary and Wrap-up	- Summarize main elements of Day One - Outline agenda for Day Two

4. BARRIERS

Objectives

1. To identify attitudinal barriers and outline their effect on the client, his/her employability and the career counselling process.

2. To clarify generic and specific barriers which hinder individuals from taking full advantage of opportunities in the trades and technologies.

Preparation

1. Review instructor's notes to prepare presentation material.

2. Obtain copy of video "*Playing it Straight*"

Time

Focus on Trades and Technologies
Summary Outline A: Three Hours

Time	Topic
DAY TWO	
9:00 a.m.	Morning energizer
9:45 a.m.	Attitudinal barriers
10:45 a.m.	STRETCH BREAK
11:00 a.m.	Generic and specific barriers
12:00 p.m.	LUNCH

Focus on Strategies
Summary Outline B: Two Hours and 45 minutes

Time	Topic
3:15 p.m.	Generic and specific barriers
3:55 p.m.	Summary and wrap-up
DAY TWO	
9:00 a.m.	Morning energizer
9:45 a.m.	Attitudinal barriers
10:45 a.m.	STRETCH BREAK

***Important! Note difference in order of presentation of topics between Summary Outline A and Summary Outline B.**

Morning Energizer

Guidelines	Notes
- Inform participants that you are handing out a form, handout #05 **Morning Energizer**, for them to complete. Explain that first they are to answer the items as they apply to themselves. Then they are to talk to other participants obtaining their answers.	- Inform participants that they will have fifteen minutes to complete the exercise. Advise that they are not to simply exchange forms to copy answers, but are to communicate with other participants.
- Divide the participants into small groups and have them answer the following questions: *Do some of your answers reflect your upbringing as a female/male? *How does sexism affect the counselling process?	- Place questions on flipchart for participant reference. Each group should pick a reporter to record major points, and read answers to group as a whole. - Sexism means being expected to do certain things, to behave in a certain way simply because you are male or female. It is about buying into a pre-conceived notion of what women and men are supposed to be and do.
- Summarize key elements arising from exercise.	- It is very difficult to ignore societal pressure. Many individuals continue to accept and impose upon themselves the roles which society has deemed appropriate. Career advisors may inadvertently be counselling both women and men to pursue gender-appropriate occupations.

Attitudinal Barriers

- Distribute handout #06 **Myth or Reality**. Participants are to individually respond 'agree' or 'disagree' to statements. Divide participants into groups to discuss their responses to each statement and the following questions:
  *What are some commonly held attitudes and how do they affect the client and his/her employability?
  *How do these attitudes affect the counselling process?

- Summary discussion on any issues arising from exercise.

- Brief presentation on attitudinal barriers.

- After participants have completed checklist, advise them that responses to statements are included in handout. Remind them that this is an opportunity to share ideas and opinions with other career advisors. There are no right or wrong answers.

- Place questions on flipchart for participant reference.

- Refer to instructor's notes #04 **Attitudinal Barriers**. Emphasize that it is essential to recognize and be able to control personal biases which adversely affect the counselling process. This refers to age, sex, social class, ethnic-racial and occupational biases and stereotyping. Only when we begin to accept these attitudes as part of ourselves can we start to rid ourselves of them and be aware of when they are getting in the way of positive interaction. Negative first reactions happen, but by accepting them, you can adjust your thinking and judge people purely on merit.

- Use the following transparencies:
  #30 Attitudinal barriers limit opportunities.
  #31 Overcoming attitudinal barriers.

Generic and Specific Barriers

- Define terms 'generic' and 'specific'.	- Generic barriers are those that apply to all individuals, while specific barriers are those which are applicable to each specific disadvantaged group.
- Outline and clarify generic and specific barriers. Use handout #07 **Generic and Specific Barriers** as a guideline for presentation.	- Use the following transparencies in presentation: #32 Generic barriers to success. #33 Visible minorities and immigrants. #34 Persons with disabilities. #35 Aboriginal Peoples. #36 Women. #37 Older workers.
- After outlining barriers to persons with disabilities, you should use the video "*Playing It Straight*" (15 minutes). Distribute brochure *Focus on Ability*.	- Youth is not included in specific barriers. This is to avoid redundancy. Point out that barriers already discussed - in particular, for immigrants and aboriginal peoples - are applicable.

5. STRATEGIES

Objectives

1. To identify and discuss strategies to overcome barriers.

2. To outline one strategy to implement in work-place.

Preparation

1. Research successful strategies for working with disadvantaged groups, and available resources (ie., programs, agencies, educational institutions, equipment, etc.

2. Obtain copy of video "*The Job Hunt*".

Time

Focus on Trades and Technologies
Summary Outline A: Two hours and 45 minutes

Time	**Topic**
1:00 p.m.	**Identifying strategies**
2:30 p.m.	**STRETCH BREAK**
2:45 p.m.	**Identifying strategies (continued)**
3:15 p.m.	**Implementing strategies**

Focus on Strategies
Summary Outline B: Three hours and 45 minutes

Time	*Topic*
11:00 a.m.	*Identifying strategies*
12:00 p.m.	*LUNCH*
1:00 p.m.	*Identifying strategies (continued)*
2:30 p.m.	*STRETCH BREAK*
2:45 p.m.	*Identifying strategies (continued)*
3:15 p.m.	*Implementing strategies*

Guidelines

Identifying Strategies

- Provide each participant with handout #08 **Strategies**.
- Divide participants into groups, and assign each group a generic barrier and specific disadvantaged group.
- Using strategy sheets as a guide, have groups brainstorm additional strategies, and detail resource information.
- Ask each group to appoint a recorder to list strategies and resource information, and to report answers to the group as a whole.

Notes

- Stress that even though career advisors may be from a variety of backgrounds, there is a common body of approaches and strategies that can be applied to the work of all.
- Clarify that the more detailed, practical, and realistic the strategies, the more beneficial the information will be to the other group members. For example, instead of saying "read appropriate books", list titles and authors.
- Provide each group with flipchart paper and felt pens.

Summary Outline A

- Have each group report answers. Ask for feedback and/or other strategies from other group members. If necessary, summarize or add information which has been missed. Allow approximately 30 minutes for brainstorming and about 10 minutes per generic and and specific barrier.

- Present video "*The Job Hunt*", (15 minutes).

Summary Outline B:

- Have each group report answers. Expand on information, in particular providing information on skills for working with specific disadvantaged groups. Ask for feedback and/or other strategies from other group members. Allow 30 minutes for brainstorming and about 15 minutes per generic and specific barriers.

Implementing Strategies

- Outline the importance of cooperation in implementing strategies.	- Refer to instructor's notes #05 **Linkage** for information. Main points are: *Linkage means concerted efforts to improve services to disadvantaged groups. *Linkages can be tailored to individual situations and communities. *Imperative to develop linkages with other career advisors and employers. - Use transparency #38, Linkages.
- Provide each participant with handout #09 **Implementing Strategies**. Ask them to choose one strategy and outline an action plan to implement it in their workplace.	- Main Points: *Essential to define strategies, but more important to implement them. *It is important to give direction to your time and energy. Goal setting is a way to get things going and a yardstick against which to measure progress.
- If time permits: Divide participants into small groups and have them share their action plan with each other. Ask participants to write a note to themselves, "*In the next month, I plan to:*" Provide each participant with an envelope to self-address. Have them place note in envelope, collect, and advise these will be mailed in three weeks.	- Have participants provide feedback and suggestions to each other. - Remind participants that it is important to put strategies into action. Participants may limit their goal to one specific action they wish to accomplish in the time frame.

6. CONCLUSION

Objectives

1. To end the workshop on a unified, positive note.
2. To evaluate the content, presentation, and overall success of the workshop.

Preparation

1. Prepare main points for workshop summary.

Time

Summary Outline A and B: 15 minutes

Time	*Topic*
3:45 p.m.	*Summarize main points*
3:55 p.m.	*Evaluation*

Guidelines	Notes
- Summarize main points of workshop. Provide opportunity for participants to ask questions.	- End the workshop on a unified, positive note. - To assist in summarizing main points of workshop, use transparency #39, Summary.
- Distribute handout #10, **Evaluation Form.** Collect and analyze after workshop.	

APPENDIX A

Handouts

1. Introduction	#01 Glossary of Terms
2. Trades and Technologies	#02 A Guide to Apprenticeship
	#03 A Guide to the Technologies
3. Trends	#04 Trends
4. Barriers	#05 Morning Energizer
	#06 Myth or Reality
	#07 Generic and Specific Barriers
5. Strategies	#08 Strategies
	#09 Implementing Strategies
6. Conclusion	#10 Evaluation

GLOSSARY OF TERMS

Career

Your career is made up of all the paid and unpaid work you have done in your lifetime, and will do in your remaining life. Student, employed worker, volunteer, homemaker - in all these work roles you have been pursuing a lifelong career. Gail Sheehy made clear in her best seller, PASSAGES, that you change as a person over your lifetime and many of these changes have to do with your work. When we speak of your future career, we are speaking of all the ways you will develop in your career, building on the foundation of past roles to seek new outlets for the talents, insights, and skills that are uniquely yours.

Occupation

A group of similar jobs. An example of an occupation would be engineering.

Job

The position a person holds in a company, factory, institution or organization. Teaching history at Pearson High School is an example of a job.

Nontraditional Occupation for Women

Any occupation for which up to one-third of the workers are women, as based on the 1986 census. (Employment and Immigration Canada).

Disadvantaged Groups

The designation of 'disadvantaged groups' implies that these groups - Aboriginal peoples, women, visible minorities, immigrants, youth, persons with disabilities and older workers - experience long-term labour market problems relative to the rest of the workforce. Individuals who belong to more than one group may be doubly disadvantaged.

Aboriginal Peoples

Individuals who perceive themselves to be Status Indians, Non-Status Indians, Metis or Inuit.

Persons with Disabilities

A person with a disability is one whose prospects of securing, retaining, and advancing in suitable employment are substantially reduced as a result of a persistent physical, mental, psychiatric, sensory or learning impairment.

Visible Minorities

Those groups of people who are, because of their race or colour, in a visible minority in Canada.

Immigrants

New Canadians; individuals not born in Canada but living in Canada with recognized status and the right to work (ie., landed immigrant, naturalized Canadian citizen).

Older Worker

Individuals over age 45, either in or out of the workforce.

Youth

Individuals between the ages of 16 and 24.

A GUIDE TO APPRENTICESHIP

Apprenticeship is a training system in which individuals develop skills and acquire knowledge leading to competence in specific designated trades. Mastering proficiency in a trade consists of both workplace training and classroom learning. Workplace training is obtained on the job under the direction of a qualified journeyman. Depending on the trade, the length of time it takes to complete an apprenticeship varies from two to four years. Apprentices who successfully complete an apprenticeship receive an Alberta Completion of Apprenticeship Certificate.

Apprenticeship is industry-driven in that employers take the initiative to train apprentices and participate in setting standards and developing regulations for the designated trades. The Apprenticeship and Trade Certification program is administered by Alberta Career Development and Employment.

APPRENTICESHIP TRADES

Name of Trade	Description	Length (Years) of Apprenticeship
Agricultural Mechanic	Services, repairs, and sets up agricultural machines.	2
Appliance Serviceman	Repairs and services household appliances.	3
Auto Body Mechanic (P)	Repairs and refinishes automobile bodies.	3
Baker	Makes bread, pastries, cookies, and cakes.	3
Barber (P)	Cuts, trims, waves, and colors hair; shaves beards, mustaches, etc.	2
Beautician (P)	Cuts, trims, waves, and colors hair; gives facial treatments, etc.	2
Boilermaker	Builds, tests, and repairs air-tight and liquid-tight containers.	3
Bricklayer	Lays brick, hollow tile, and concrete block for buildings or other structures.	3
Cabinetmaker	Builds custom or production-type fixtures and furniture of wood and wood substitutes.	4
Carpenter	Works with wood and wood substitutes in the construction of buildings and other structures.	4
Cement Finisher	Places, finishes, cuts and repairs concrete.	3
Communication Electrician	Installs, services, and repairs telephone equipment and related communication systems.	4

Cook	Prepares food and meals in hotels, restaurants, and institutions.	3
Crane and Hoisting Equipment Operator (P)	Operates tower cranes, mobile cranes, and boom trucks to lift and swing material.	
-- Boom Truck Operator		1
-- Mobile Crane Operator		3
-- Tower Crane Operator		2
Electrical Rewind Mechanic	Repairs and rebuilds electric motors, generators, transformers, controls, and other electrical equipment.	4
Electrician (P)	Installs, alters, repairs, and maintains electrical systems in buildings to supply heat, light, power, controls, and signal or fire alarms.	4
Electronic Technician (P)	Services and repairs radio and television-receiving equipment.	4
Elevator Constructor (P)	Installs, repairs, and maintains elevators, escalators, moving walkways, etc.	*
Floorcovering Mechanic	Installs many types of resilient and carpet floorcoverings in buildings.	2
Gasfitter (P)	Installs piping, appliances, equipment, and controls for the use of natural gas or propane gas as a fuel.	3
Glassworker	Cuts and installs glass for windows, showcases, and curtain-wall building construction.	4
Heavy Duty Mechanic (P)	Services and repairs construction and other heavy industrial mobile and stationary equipment.	4

Instrument Mechanic	Maintains, services, repairs, and installs measuring and control instruments used in process industries.	4
Insulator	Installs insulation materials in commercial and industrial structures.	4
Ironworker	Builds, erects, constructs, and joins structural steel on buildings, bridges, and towers.	3
Landscape Gardener	Grows, installs, and maintains trees, plants, and grasses in all environments.	4
Lather-Interior Systems Mechanic	Installs metal, plaster lath, and interior finishes in the construction of buildings.	3
Locksmith	Fixes, installs or replaces any type of lock including safes, automobile locks, or other types of security systems.	**
Machinist	Works with metals; operates metal-cutting and shaping machines.	4
Millwright	Installs and maintains machinery in factories and other production plants.	4
Motorcycle Mechanic (P)	Assembles, services, and repairs two-wheeled single-tracked motor vehicles.	4
Motor Mechanic (P)	Services and repairs automobiles.	4
Painter & Decorator	Applies paint, varnish and wallpaper to interior and exterior building surfaces, and to other fittings and furnishings.	3
Partsman	Stores and dispenses automotive, heavy duty or farm machinery parts.	3

Plasterer	Applies plaster and stucco including decorative finishes.	*
Plumber (P)	Installs piping, fixtures, appliances, equipment, and controls for water and sanitation purposes.	4
Power Lineman	Constructs, maintains, or operates electrical transmission or distribution systems.	3
Power System Electrician	Constructs or maintains electrical utility power system and power station equipment or metering, protection, and control apparatus.	4
Printing & Graphic Arts Craftsman	Prepares, produces, and finishes printed material.	4
Projectionist	Operates motion picture projectors.	*
Recreation Vehicle Mechanic (P)	Repairs mobile motor home and recreation vehicles.	2
Refrigeration Mechanic (P)	Installs and services refrigerating and air conditioning systems.	4
Roofer	Installs and maintains built-up roofs, composition roof coverings, shakes, shingles and plastic membranes.	3
Sawfiler	Repairs, sets, and sharpens band saws, chain saws, hand saws, circular saws, and other types of saw blades.	4
Sheet Metal Worker (P)	Designs, fabricates, installs, and repairs ducts and fittings for heating, ventilating, air conditioning, exhaust, and dust collecting systems.	4
Sprinkler Systems Installer	Installs and maintains fixed fire extinguishing systems.	4

Steamfitter-Pipefitter (P)	Installs piping, equipment and controls for hot water, drain, process, and chemical piping in industrial and commercial establishments.	4
Steel Fabricator	Works in the shop fabrication, preparation, layout, assembly, or repair of structural and miscellaneous components or vessels.	3
Tilesetter	Works with ceramic tile, terrazzo, and marble.	3
Tool & Die Maker	Manufactures and repairs jigs, fixtures, gauges, dies, molds, press tools, and various types of small mechanical devices.	*
Transport Refrigeration Mechanic	Installs, repairs, and maintains equipment in mobile units used to haul perishable loads.	3
Water Well Driller	Drills, installs, and services water wells and installs and services water well pumping systems.	2
Welder (P)	Joins metal by fusion using oxyacetylene flame, electric arc or other welding processes.	3

(P) Designated Proficiency Trade
* No classroom training available
** Training requirements under review

APPRENTICESHIP TRADES

Construction Trades

Trades frequently associated with construction industries:

Boilermaker
Bricklayer
Cabinetmaker
Carpenter
Cement Finisher
Communication Electrician
Crane and Hoisting Equipment Operator
Electrician
Elevator Constructor
Floor Covering Mechanic
Gasfitter
Glassworker
Insulator
Ironworker
Landscape Gardener
Lather-Interior Systems Mechanic
Painter and Decorator
Plasterer
Plumber
Power Lineman
Power Systems Electrician
Refrigeration Mechanic
Roofer
Sawfiler
Sheet Metal Worker
Sprinkler Systems Installer
Steamfitter - Pipefitter

Service Trades

Trades frequently associated with service industries:

Appliance Serviceman
Baker
Barber
Beautician
Communications Electrician
Cook
Electrical Rewind Mechanic
Electronic Technician
Instrument Mechanic
Locksmith
Printing and Graphic Arts Craftsman
Projectionist
Tilesetter
Water Well Driller

Mechanical Trades

Trades frequently associated with mechanical industries:

Agricultural Mechanic
Autobody Mechanic
Heavy Duty Mechanic
Machinist
Millwright
Motorcycle Mechanic
Partsman
Recreational Vehicle Mechanic
Steel Fabricator
Tool and Die Maker
Transport Refrigeration Mechanic
Welder

DESIGNATION OF A TRADE

What does trade designation mean?

Designation means the formal recognition of a trade through Ministerial or Cabinet Order. This process authorizes the Department to engage in training and/or certification activities for trades. It also commits the expenditure of government funds and places obligations on citizens through compliance with trade regulations.

What are qualification trades?

They are trades in which certification is voluntary. For this category of trades a journeyman is defined as a "person who is, in the opinion of the Director, an experienced and skilled worker in the relevant trade whether or not the person holds a Certification of Qualification for the trades." Candidates who meet necessary work experience regulations can obtain an Alberta Certificate of Qualification by passing the prescribed journeyman examinations. Although certification of journeymen is voluntary, participation in apprenticeship is compulsory for all persons engaged in learning the trade. The trades designated as qualification trades are:

Agricultural Mechanic
Appliance Serviceman
Baker
Boilermaker
Bricklayer
Cabinetmaker
Carpenter
Cement Finisher
Communication Electrician
Cook
Electrical Rewind Mechanic
Floorcovering Mechanic
Glassworker
Instrument Mechanic
Insulator
Ironworker
Landscape Gardener
Lather-Interior Systems Mechanic
Locksmith
Machinist
Millwright
Painter and Decorator
Partsman
Plasterer
Power Lineman
Power Systems Electrician
Printing & Graphic Arts Craftsman
Projectionist
Roofer
Sawfiler
Sprinkler Fitter
Steel Fabricator
Tilesetter
Tool and Die Maker
Transport Refrigeration Mechanic
Water Well Driller

What are proficiency trades?

They are trades in which certification is compulsory. Any person engaged in the work of these trades is required to hold an Alberta Certificate of Proficiency, be an indentured apprentice, or have special authorization issued by the Director. Candidates who have developed appropriate trade skills to the journeyman level can obtain an Alberta Certificate of Proficiency by passing the prescribed journeyman examination(s). The decision to designate a trade as a proficiency trade depends on the extent to which the work performed affects the safety of the general public. The trades designated as proficiency trades are:

Auto Body Mechanic
Barber
Beautician
Electrician
Electronic Technician
Elevator Constructor
Gasfitter
Heavy Duty Mechanic
Motorcycle Mechanic
Motor Mechanic
Plumber
Recreation Vehicle Mechanic
Refrigeration Mechanic
Sheet Metal Mechanic
Steamfitter - Pipefitter
Welder

OCCUPATIONS AND TRAINING FOR THE TECHNOLOGIES

This is not a complete listing of all technological occupations, post-secondary programs and institutions, rather it is an overview of some of the occupations and training available in the technologies in Alberta.

C = CERTIFICATE
D = DIPLOMA
1 = 1 YEAR
2 = 2 YEARS

	C.C.D.O.	TECHNOLOGY INSTITUTES			PUBLIC COLLEGES										ALBERTA VOCATIONAL CENTRES				LENGTH
		Northern Alberta Institute of Technology	Southern Alberta Institute of Technology	Westerra	Fairview College	Grande Prairie Regional College	Grant MacEwan Community College	Keyano College	Lakeland College	Lethbridge Community College	Medicine Hat College	Mount Royal College	Olds College	Red Deer College	Calgary	Edmonton	Lac La Biche	Lesser Slave Lake	
AGRICULTURE																			
Agricultural Engineering Technologist	2159												D						2
Animal Health Technologist	3159	D			D				D				D						2
Beekeeping Technician	7113				C														1
Irrigation Technologist	2131									D									2
Turfgrass Equipment Technician	7195				C														1
ARCHITECTURE																			
Architectural Technologist	2165	D	D																2
Engineering Design and Drafting Technologist	2163	D	D							D									2
Interior Design Technician	3313	D							D			D							2
ARTS																			
Photography Processing Technician	9591	D																	2
Print Management Technologist	1137		D																2
AVIATION																			
Aeronautical Engineering Technologist	2165		D																3
Aircraft [illegible]enance Engineer	8582		D																2
Avionics Technician	2165		D																2

C = CERTIFICATE
D = DIPLOMA
1 = 1 YEAR
2 = 2 YEARS

	C.C.D.O.	TECHNOLOGY INSTITUTES			PUBLIC COLLEGES										ALBERTA VOCATIONAL CENTRES				LENGTH
		Northern Alberta Institute of Technology	Southern Alberta Institute of Technology	Westerra	Fairview College	Grande Prairie Regional College	Grant MacEwan Community College	Keyano College	Lakeland College	Lethbridge Community College	Medicine Hat College	Mount Royal College	Olds College	Red Deer College	Calgary	Edmonton	Lac La Biche	Lesser Slave Lake	
COMPUTER																			
Computer Service Technologist	8536			D															2
Systems Analyst	2183	D	D			D				D		D		D					2
ENGINEERING																			
Air Conditioning Engineering Technologist	2165	D	D																2
Building Construction Engineering Technologist	2165	D																	2
Chemical Engineering Technologist	2165		D																2
Civil Engineering Technologist	2165	D	D							D									2
Electrical Engineering Technologist	2165	D	D																2
Electronics Technician/Service Technician	2165	C																	1
Electronic Technologist	2165	D	D							D									2
Engineering and Science Technologist	2117		D																2
Industrial Engineering Technologist	2165		D																2
Instrument Maintenance Mechanic and Technician	8588	D	D																2
Materials Engineering Technologist	2165	D																	2
Mechanical Engineering Technologist	2165	D	D																2
Mineral Engineering Technologist	2165	D																	2
Petroleum Engineering Technologist	2165	D																	2
Plastics Engineering Technologist	2165	D																	2
Survey Technician	2161																	C	1
Survey Tech[illegible]ist	2161	D	D																2

C = CERTIFICATE
D = DIPLOMA
1 = 1 YEAR
2 = 2 YEARS

	C.C.D.O.	TECHNOLOGY INSTITUTES			PUBLIC COLLEGES										ALBERTA VOCATIONAL CENTRES				LENGTH
		Northern Alberta Institute of Technology	Southern Alberta Institute of Technology	Westerra	Fairview College	Grande Prairie Regional College	Grant MacEwan Community College	Keyano College	Lakeland College	Lethbridge Community College	Medicine Hat College	Mount Royal College	Olds College	Red Deer College	Calgary	Edmonton	Lac La Biche	Lesser Slave Lake	
HEALTH/MEDICAL SCIENCE																			
Dental Laboratory Technician	3157	D																	2
Dietary Technician	3159	D	D																2
Emergency Medical Technician - Paramedic	3139	D	D																2
Health Record Technician	4161		C																1
Laboratory and X-Ray Technician	3156	C																	1
Medical Laboratory Technologist	3156	D	D																2
Medical X-Ray Technologist	3155	D																	2
Nuclear Medicine Technologist	3155		D																2
Occupational Health Technologist	3131											D							2
Pharmacy Technician	3159													C					1
LIFE/BIOLOGICAL SCIENCES																			
Biological Technician	2135	D							D	D		D							2
Forester/Forest Technician	2139	D																	2
Water and Wastewater Treatment Plant Operator	9535			C															

C.C.D.O. numbers which place occupations within a major occupational classification are listed. These are provided to direct career advisors to Canadian Classification and Dictionary of Occupations, occupational profiles and to other sources of career information.

The length of time normally required to complete each program is given in the LENGTH column.

The institut[illegible]s) offering a particular program, and type of progr[illegible] are indicated by the D (Diploma), or C (Certificate[illegible]

SOURCE: Post-Secondary Educational Programs. Alberta Career Development & Employment, 1989.

TRENDS

DEMOGRAPHIC AND LABOUR MARKET TRENDS

- The demographic composition of Alberta indicates a declining youth base and aging population. As the North American population grows older, the labour force concerns of older workers will become a major issue in the next decade.

- Over the coming decades, the population of Alberta will continue to shift from a predominantly European background to one of more diversity. Increased immigration is viewed by some to be the solution to alleviating labour and skill shortages. It is imperative to address issues such as language, racial, and accreditation barriers in order to make optimum use of immigrants' knowledge and skills for the benefit of both the individual newcomer and the labour market.

- Economic diversification and rapid growth in the service sector are occurring simultaneously with increased emphasis on exports and global markets and a new phase of development in the forestry and energy industries. These new developments increase demands for a skilled, adaptable, and capable workforce.

- Alberta's ability to compete in the knowledge-based economy of the future may be seriously undermined by shortcomings in our educational system. Skill requirements in the labour market are increasing, while the overall quantity and quality of entry level workers is declining. A determined effort by business, government and educational institutions is required to develop, train, and maintain skilled workers.

- Demographic changes mean that greater determination and cooperation are required to provide opportunities to youth, women, older workers, aboriginal peoples, visible minorities immigrants, and persons with disabilities, in order to assist them to access skills and knowledge that will enable them to make a full and effective contribution to the labour market.

ABORIGINAL PEOPLES

- Labour force activity data reflect a significantly disadvantaged situation for Alberta's aboriginal peoples. Those who seek work face substantial barriers and subsequently experience extremely high levels of unemployment.
- During the 1990's fully 25% of all Albertans reaching labour market entry age will be of aboriginal ancestry. These Albertans are generally unable to successfully enter the labour market due to inadequate education and skill levels.
- Training programs and employment opportunities are often geographically inaccessible for aboriginal peoples in rural and remote communities and the need to uproot to attend training in the cities is often a deterrent.
- The aboriginal population of Alberta is becoming increasingly urban, which creates a unique set of concerns.
- Aboriginal people have substantially lower levels of educational attainment than of other Albertans. Drop-out rates among aboriginal youth are much higher than for non-aboriginals.
- "*Aboriginal Peoples*" refers to persons who perceive themselves to be Status Indians, Non-Status Indians, Metis, or Inuit.

Status Indians:	Individuals registered with the Federal Government as Indians according to the Indian Act (1951).
Non-Status Indians:	Individuals who identify themselves as Indians, but are not registered under the terms of the Indian Act (1951).
Metis:	Individuals of mixed aboriginal and non-aboriginal ancestry; persons whose pre-European ancestors inhabited Western and Northern Canada; or persons who identify themselves as Metis and are so recognized by the Metis community.
Inuit:	Formerly known as Eskimos, the Inuit have traditionally resided in the Northwest Territories, Labrador, and Northern Quebec. Inuit individuals make up a very small proportion of Alberta's aboriginal population.

WOMEN

- One of the major changes that has occurred in the labour market has been the steady and rapid increase in the numbers of women entering and remaining in the workforce. By the year 2000, 70% of Alberta women are expected to be in the labour force.
- The majority of employed women continue to be concentrated in clerical, sales and service occupations. The continuing occupational segregation of women is a matter of concern because the occupations in which women are concentrated are generally low-paying, lack opportunity for advancement, and are slowly being eliminated or fragmented due to technology.
- The socialization process and stereotypes about gender appropriate occupations still tend to limit choices for women.

PERSONS WITH DISABILITIES

- Low participation and high unemployment rates for those participating in the labour force indicate that persons with disabilities find it difficult to obtain jobs.
- There are many unfounded stereotypes about the work potential of persons with disabilities. The reality is that in situations where persons with disabilities have been given the opportunity to work in regular jobs, their performance has been equal or superior to that of the non-disabled. Their absenteeism, turnover, and tardiness is lower, and the quality of work is the same or better than that of other workers.
- It is essential to remove the physical and attitudinal barriers which stand in the way of persons with disabilities being given a fair chance in the workplace.

IMMIGRANTS AND VISIBLE MINORITIES

- Immigrants have always made up an important component of Alberta's population with each successive wave of immigrants leaving its own distinct mark. Over the years, they have provided capital, labour and creativity for the development of the province. The importance of the immigrant population may grow in the future if birth rates continue to fall.

- Alberta will have to rely heavily on new immigrants for a continuing supply of workers. Most will be from non-European, non-English speaking countries. This has wide ranging implications for changes in recruitment and selection, assessment of foreign education and experience, English as a second language instruction, training methods and supervisor/employee relations training within Alberta companies.

- Rapid increase in visible minority groups is here to stay, and the barriers of colour, language, culture and attitudes will be greater than any faced before.

- There are many barriers to maximum utilization of the skills and knowledge of the recent immigrant. Probably the greatest challenge to most is mastery of the English language. Proficiency in English underlies competence in most jobs and often the inability to communicate is responsible for employment in low skilled occupations. As well, differences in licensing and training requirements make it difficult for skilled or professional immigrants to go to work right away in the same type of jobs they had in their own countries.

- Enormous challenges exist in developing expertise for meeting diverse client needs effectively. Meeting this challenge will prevent the 'dissimilar client' from becoming the 'disadvantaged client'.

OLDER WORKERS

- Several critical barriers currently limit the workforce involvement of persons over 45. There is no doubt that opportunities for older workers and the abilities of employers to exact maximum benefit from the available labour force are being unfairly limited.

- Educational institutions will have to provide an even wider range of opportunities than they do now to accommodate older workers who need to update their present level of expertise, who need or wish to change occupations and require complete retraining, or who simply wish to take advantage of their increased leisure time to acquire new skills and knowledge in vocational or avocational pursuits.

- Employers and career advisors must become aware of the issues surrounding the older worker so they can overcome any misconceptions, and can assist older workers to maximize their potential in the workplace.

YOUTH

- The proportion of youth in the workforce will decline throughout the 1990's. Employers will be less able to rely on young workers fresh from school to meet their new skill requirements.

- During the 1990's, fully twenty-five percent of all Albertans reaching labour market entry age will be of aboriginal ancestry. Due to inadequate education and skill levels, many young aboriginal people are unable to enter training and employment in the trades and technologies.

- As a source of skilled or potentially skilled labour, young immigrants are important to Canada's economic growth. It is extremely important to remove barriers that restrict young immigrants from entering and remaining in the labour market.

- Workers can no longer expect to acquire one set of skills in their youth which will carry them throughout their working lives. As economic restructuring continues, and the numbers of jobs in particular occupations grow at different rates, some individuals will have to meet the challenge not only of changing jobs, but of changing occupations in mid-life. This means that young people must develop strong and adaptable basic skills.

Handout #05

MORNING ENERGIZER

			Names of Participants				
	Information	*Own Answers*					
1.	Favourite Legend or Fairy Tale Character						
2.	Favourite Childhood Toy						
3.	Favourite Television Show						
4.	Favourite Leisure Activity						
5.	Favourite Hero/Heroine						

MYTH OR REALITY

This exercise is an opportunity to increase your awareness of attitudes about disadvantaged groups and the trades and technologies.

Directions: Read each of the statements below. Indicate with a check mark if you agree or disagree. Mark what you really feel, not what you think you should believe. There are no right or wrong answers, but the next few pages may provide some helpful information.

Agree	Disagree	
________	________	1. Many employers will not hire persons with disabilities because the cost in terms of decreased productivity and attendance, plus considerable expense in making necessary adjustments to the workplace are just too great.
________	________	2. Certain jobs are more appropriate for men than for women and vice versa.
________	________	3. Many immigrants, especially visible minorities, have difficulty obtaining and maintaining employment, because of discrimination from employers and/or co-workers.
________	________	4. The economic forecast is bleak for aboriginal peoples because many just don't want to obtain training or employment.
________	________	5. Jobs in the trades and technologies are not considered professional or prestigious.

1. In a Canadian Chamber of Commerce study, in answer to the question "***What has been your experience with respect to the job performance of persons with disabilities?***", the results were:

   a. Level of production: 88.4% felt that persons with physical disabilities performed as well as, or better than, regular employees and 47.6% felt that way about persons with mental disabilities.

   b. Attendance record: 91.6% felt that persons with physical disabilities performed as well as, or better than, regular employees and 73% felt that way about persons with mental disabilities.

   c. Length of stay with firm: 93.8% felt that persons with physical disabilities performed as well as, or better than, regular employees and 73% felt that way about persons with mental disabilities.

   d. Quality of work: 95% felt that persons with physical disabilities performed as well as, or better than, regular employees and 60.9% felt that way about persons with mental disabilities.

Studies conducted by DuPont, a major North American employer, show that compared to the average employee, persons with disabilities:

- perform at similar levels.
- have average or lower turnover rates.
- have good attendance.
- have fewer on-the-job accidents.

It has also been found that there is generally no increase in insurance costs, when pooled under group plans, and that no special privileges are required.

Source: Ontario Ministry of Labour, Information for Educators, 1985.

Paquette, Susan, "Hiring the Handicapped: Fact and Fantasy", The Labour Gazette, April 1976.

2. This assumption is based on traditionally held attitudes that certain types of work are appropriate for men or women than on factual information about women's abilities. Women are entering fields such as the skilled trades and technologies in increasingly greater numbers and are proving their capabilities in these areas.

3. There is evidence to indicate that immigrants, especially visible minorities, experience discrimination from employers and co-workers. The results of a study carried out by Ginzberg and Henry in Toronto about discrimination in the labour market found that employers tend to discriminate against immigrants in general and visible minorities in particular. White Canadians had to make up to 12 calls to secure 10 job interviews and were never screened; white immigrants were screened 5% of the time and had to make 13 calls; Blacks and Indo-Pakistanis were screened between 15% and 20% of the time and had to make 18 calls to receive 10 interviews. When applying in persons, blacks were told 48% of the time and Indo-Pakistanis 42%, that the job vacancies had been filled, although for whites it was still open.

   The results of a study conducted in Edmonton by the Career Development Institute describes the experiences of minority women who had been employed in a print shop. The attitudes of co-workers made these women uncomfortable in the workplace. They did not understand the behaviour of some of their co-workers and felt that cultural differences were the cause of misunderstandings. Inadequate English language proficiency also created problems. The women found following directions to be very difficult because the supervisors spoke too quickly and did not like having to repeat instructions. Employers were said to have been impatient when dealing with the language problem.

Source: Career Development Institute, Assessment of Client Needs For Transitional Programs into the Trades and Technologies, 1988.

Ginzberg, Effie and Henry, Frances. "Confirming Discrimination in the Toronto Labour Market: An Empirical Study", Currents, Toronto, Winter, 1984/85 (23-28).

4. Factors such as the high unemployment and school dropout rates, contribute to the belief that the majority of aboriginal people do not want to work. This attitude may be assumed by some individuals, but is not characteristic of the entire aboriginal population. In a study conducted on aboriginal women and work, the overriding conclusion was that many more aboriginal women would like to work than can do so under the present circumstances. Barriers such as cultural differences, limited English proficiency, inadequate education and training, and geographical isolation contribute to difficulties in obtaining and retaining employment.

Source: Hull, Jeremy, Native Women and Work, Institute of Urban Studies, Winnipeg, 1983.

5. Research by the Career Development Institute into youth stated "***the group believed that occupations in the trades and technologies were held in low esteem by the general public***". Some perceptions among Natives were: "***one individual thought trades were not worth pursuing and another believed trades to be somewhat better than para-professional but not the equivalent of a professional occupation.***". This perceived image of the trades as dead-end unprofessional careers must be changed. This image deters individuals from entering these occupational areas, encourages the educational system to see the trades as a career path for students who find academic studies difficult, and influences parents to downplay the value of the trades and technologies as occupations for their children.

   In fact, a career in the trades and technologies often carries a wide variety of rewards, including the possibility of substantial improvements in status and income, advancement possibilities and fringe benefits.

Source: Career Development Institute, Assessment of Client Needs For Transitional Programs Into the Trades and Technologies, 1988.

GENERIC BARRIERS

1. Consideration of trades and technologies as occupational choices.
   - a) Unawareness by individuals of occupations, training and employment opportunities.
   - b) Unawareness by career advisors:
     - -of occupations, training and employment opportunities.
     - -of prospectives of disadvantaged group needs.
   - c) Lack of role models.
   - d) Individual circumstances.

2. Acquisition and completion of apprenticeship employment and training/technological training.
   - a) Employer attitude.
   - b) Inadequate previous education.
   - c) Limited proficiency in English.
   - d) Discrimination.
   - e) Training not available in hometown.
   - f) Limited financial resources.

3. Surviving in the trades and technologies (job-related irritants).
   - a) Harassment.
   - b) Isolation.
   - c) Lack of belief by others in jobholder competence.

4. Unrealistic attitudes and opinions of career advisors which may limit educational and employment opportunities for clients.

5. Limited support systems.
   - a) Limited support from family and friends.
   - b) Lack of networks and support groups.

SPECIFIC BARRIERS

Persons with Disabilities	*Women*	*Visible Minorities and Immigrants*
a) Architectural	a) Gender/role perception	a) Limited recognition of previous training outside of Canada
b) Educational	b) Myth that women lack physical strength and stamina	b) Proficiency in English
c) Communication problems	c) Family responsibilities	c) Cultural
d) Unrealistic attitudes	d) Math/Science limitations	

Older Worker	*Aboriginal Peoples*
a) Ageism	a) Limited employment and training in rural and isolated communities
b) Personal limitations	b) Cultural

CONSIDERATION OF TRADES AND TECHNOLOGIES AS OCCUPATIONAL CHOICES

Barrier	Strategies
A) Unawareness by individuals of occupations, training and employment opportunities.	Increase public awareness through a media campaign. Examples:
	Implement workshops to explore the trades and technologies.
	Assist clients in identifying internal personal factors related to life/work decision-making including temperaments, values, interests, abilities, and motives. Techniques:
	Advise clients to enter bridging programs. Programs:
	Provide methods and opportunities for individuals to broaden career options and explore work environments. Examples: *"Adopt-a-shop" program where schools align themselves with industry to familiarize students with the work environment. *Job shadowing.

B) Unawareness by career advisors: *-of occupations, training and job opportunities.*	Expand knowledge of education, training, employment trends, labour market and career resources that provide information about job tasks, functions, salaries, requirements and future outlook. Examples: *Obtain occupational profiles by contacting the Career Information Hotline at Zenith 22140. *Liaise with employers, trade and technological associations, educational institutions and other career advisors. Contact: -Educational institutions for information on programs and entrance requirements. -Alberta Career Development and Employment who provide a wide range of career services. -Trade union offices for information on specific union trades and journeyman requirements. They can also provide forecasts of labour needs in specific occupations.
-of perspectives of disadvantaged group needs.	Avoid piecemeal approach. Identify personal and environmental barriers affecting life/ work decision-making. Use resources appropriate for specified situations and populations. Resources:

	Develop sensitivity toward and awareness of cultural norms of clients. Examples:
C) Limited role models.	Develop community contact guide listing out resource people in community.
D) Individual circumstances.	Assist clients in the identification of contextual factors in life/work decision-making, (ie., finances, family, friends, accessibility and availability of training and employment opportunities). Outline barriers that keep client from acting and factors that contribute towards goal.

ACQUISITION AND COMPLETION OF APPRENTICESHIP EMPLOYMENT AND TRAINING/TECHNOLOGICAL TRAINING.

Barrier	Strategies
A) Employer attitude	Increase employer awareness by: *Promoting Access Awareness Campaign "*Today's Employers Know a Good Investment When They See One*". The basic message of campaign is that individuals from disadvantaged groups have ability and will become an increasingly important source of labour in Alberta, given current demographic changes. *Presentations to Chamber of Commerce, employer associations.
B) Inadequate previous education.	Refer individuals to courses such as: *Job Readiness Training - courses offered to chronically unemployed workers or persons who have been out of the labour force for a long period. This may include elements of life skills, work experience, job orientation and academic upgrading. *Basic Training for Skill Development - courses offered to upgrade basic skills in math, science, and communication to meet academic requirements for entry into Skill Training or to proceed to employment.

*Skill Training - pre-employment courses, providing trainees with entry-level skills training in a particular occupation or course designed to upgrade or update a person's skills in an occupation.

C) Limited proficiency in English.

Refer individuals to programs to increase proficiency in English language.
Programs:
*English as a Second Language.
*Occupational English.

Refer to programs where individual is assisted by English tutor.
Programs:

D) Discrimination.

Refer client to Human Rights Commission or other advocacy groups.
Groups:

E) Training and employment not available in hometown.	Identify available distance education programs. Programs:
	Assist client in developing and following through with relocation plans if he/she chooses to move to where training and employment is located. Techniques:
F) Limited financial resources.	Contact Career Development Centres for information on financial assistance programs. Programs:
	Assist client in identifying other options. Examples: *Personal loan from bank, family and friends. *Part-time job.

SURVIVING IN THE TRADES AND TECHNOLOGIES (JOB-RELATED IRRITANTS)

Barrier	Strategies
A) Harassment	Advise client to maintain a sense of perspective to distinguish between the teasing that is part of any initiative process and other activities that interfere with work, opportunity to learn, health, and safety. To deal with harassment, advise client to: *Approach the person, point out the inappropriate behaviour, and advise him/her to stop. Consider putting complaints in written form. *If this approach fails, use informal channels, such as supervisor, mentor or personnel manager. *If informal channels do not work, use formal grievance procedures. *Final step is to contact the Human Rights Commission. Staff training is a beneficial approach. It can be used to set standards about acceptable behaviour in the work environment, and provide information on methods for dealing with harassment.

B) Isolation

Introduce individuals to the workplace in pairs. It seems that staff and employers tend to view several members from the same disadvantaged group as co-workers first, and members of disadvantaged group second rather than vice-versa.

Support, encouragement and information should be provided to an individual about co-workers and employers expectations before beginning the job. Often frustrations can be overcome by being prepared and having someone to talk to who understands the situation.

C) Lack of belief by others in jobholders competence.

Advise clients that they may need to prove themselves in the initial stage of their job.

Provide or refer to self-esteem and assertiveness workshops/counselling.
Resources:

LIMITED SUPPORT SYSTEMS

Barrier	Strategies
A) Limited support from family and friends	Identify support groups available to clients. Groups:
	Provide counselling to increase awareness of strategies that will empower clients to be successful in dealing with negative attitudes from family and friends.
	Refer to family counselling. Resources:
B) Limited networks and support groups	Form a 'Women in Trades' group.

BARRIER: UNREALISTIC ATTITUDES AND OPINIONS OF CAREER ADVISORS

STRATEGIES:

To aid in understanding social values and uniqueness of various cultures, refer to multi-cultural courses:

Courses:

Communicate with individual about inappropriate behaviour(s), and suggest positive steps for change.

ABORIGINAL PEOPLES

Barrier	Strategies
A) Limited employment and training in rural and isolated communities	Develop and support community level training initiatives which act as a first step towards further training and employment. Examples: *Opportunity Corps.
	Develop and refer individuals to programs and organizations which will empower them to develop the economic base of their own communities. Examples: *Business Enterprises and Self-Governing Systems of Indian, Inuit and Metis Peoples Program in Management, University of Lethbridge. *Native Outreach.
	Refer individuals to transition programs. Examples: *Aboriginal Transition Year Program (U of A).
	Identify available distance education programs. Programs: *Athabasca University.

B) Cultural

Identify and utilize aboriginal resource people in educational programs to enhance the self-image of aboriginal students and to increase the understanding among non-Natives
Resource People:

Develop and/or locate culturally appropriate curriculum and materials.
Examples:
*Four Worlds Development Program, University of Lethbridge.

Develop effective support systems for students in educational institutions.
Examples:
*Peer support group.
*Aboriginal liaison workers.

Adapt program delivery to the learning style of aboriginal students.
Examples:

WOMEN

Barriers	Strategies
A) Gender/role perception	Develop and implement programs for eliminating sex/role stereotypes: Examples: Bring female role models into workshop to increase awareness of occupational opportunities and to reinforce a positive image of women in the trades and technologies.
B) Myth that women lack physical strength and stamina	Advise that most women just starting a physically demanding job are probably as strong (or as weak) as most men. Point out that strength is not just a question of muscles, but also a question of balance, leverage and familiarity with materials and tools, work techniques and environments. Consult occupational profiles to determine physical requirements. If you are not physically active, start a fitness program to get into shape before entering an occupation that requires physical activity. *Occupational Profiles are available from Career Development Centres and through the Career Hotline.

C) Family responsibilities

Ensure that client understands that apprenticeship usually requires theoretical training varying from 3 to 12 weeks in length each year in a technical training institute or public college. Unless in or near the training facilities, this may mean time away from family.

Provide support which allows a wide range of alternatives to be considered, but do not expect women to alter their values about the interconnectedness of their many roles.

Inform about childcare options.
Options:

Enable clients to assess management of work and family roles, and assumptions about family responsibilities. Have them involve their family in plans from the start.
Examples:

D) Math/Science limitations

Encourage and stress the importance of taking mathematics and science courses.
Techniques:

IMMIGRANTS AND VISIBLE MINORITIES

Barriers	Strategies
A) Limited recognition of previous training outside of Canada	Advise that some jobs performed in home country have no equivalent here, but determine which skills may be recognized.
	Point out the differences in licensing and training requirements. Advise that it is difficult for professional or skilled immigrants to go to work right away in the same type of job they had in their home country without further training or education.
	Refer to immigrant services agency for career counselling. Agencies:
B) Proficiency in English	Career advisors counselling limited English proficient persons about job perspectives should acquire a clear understanding of their proficiency in English. Techniques:
	Arrange for adequate language support personnel on the job.

Refer to English as a Second Language, Occupational English, and Conversational English classes.
Programs:

C) Cultural

Advise clients about appropriate work-related behaviours, for example, dress, grooming, and non-verbal communication.

Refer to programs or organizations to reduce feelings of isolation.
Examples:

Promote cultural awareness within the labour market.
Techniques:

PERSONS WITH DISABILITIES

Barriers	Strategies
A) Architectural	*For dealing with architectural and transportation barriers.* Discussions with architects designers, engineers, and employers about accessibility issues and possible ways to make buildings and transportation systems better accessible. Techniques: Become familiar with local transportation systems and with organizations dealing with accessibility modifications in order to provide a source of referrals to schools, employers, and clients attempting to overcome barriers. Transportation: Organizations: *For dealing with difficulties in using workstations, tools, and equipment.* Become familiar with designs that tend to present fewer problems in the first place and learn how to select tools and workstations with desirable features. Examples:

Make contacts with consumer and design groups concerned with specialized modifications in order to refer difficult problems.
Organizations:

B) Educational

For improving independent living and basic education skills.

Arrange for careful assessment of actual strengths and weaknesses, and work with the individual to develop a program of skills to be gained.
Examples:

Refer or provide training in independent living or basic skills. Development of confidence should also be a goal of such programs.
Programs:

For improving work adjustment and vocational skills.

Work with the individual to determine occupational goals and skills to be gained.

Identify a combination of specialized and mainstream training opportunities appropriate to the individual's goals and present status. These might include work simulation, work experience, conditioning programs, and other techniques in a variety of settings.
Programs:

C) Communication Problems

For dealing with problems related to sensory deficits.

Become familiar with communication techniques to facilitate personal interaction; be able to refer schools and employers to sources of specialized training.
Training:

Become familiar with specialized aids and devices that allow deaf people to use the telephone.
Examples:

For dealing with problems in using communications equipment.

Become familiar with self-dialing telephones and other specialized devices and with agencies or organizations that provide consultation on communication problems.
Devices:

Organizations:

D) Unrealistic attitudes

For dealing with low societal expectations.

Disseminate information about the potential of persons with disabilities through personal contact and the media.
Examples:
*Distribute *Focus on Ability* brochure.

For dealing with lack of employer knowledge and with employer fears.

Dispel myths about persons with disabilities.
Techniques:
*Present *Playing it Straight* video to business groups.

Work with unions, advocacy groups and others to facilitate the entry of persons with disabilities into the workforce.
Advocacy groups:
*People First.

Advise of available financial programs:
Programs:
*Canadian Jobs Strategy.
*Vocational Rehabilitation for Disabled Persons (VRDP).

For dealing with low expectations by disabled clients themselves.

Provide supportive counselling including the opportunity to meet active, successful, independent persons with disabilities.
Resource People:

Provide work experience and vocational opportunities that offer authentic challenges and real opportunities for success.

OLDER WORKER

Barrier	**Strategies**
A) Ageism	Offer workshops to sensitize employers to the needs of older workers. Workshops: Encourage employers to establish in-house training and educational programs to enable workers to upgrade current skills or learn entirely new skills for a new job. Examples: *AT & T retrains workers affected by technological change, many of whom are older workers. *General Motors established a job bank for workers laid off by new technology to be retrained for new jobs, either inside or outside GM.
B) Personal limitations	Realistically assess present values, needs, work interests and competencies, including transferable skills. Build on the foundation of past work training and experience. Techniques:

Assist client to confront myths surrounding change and aging.
Techniques:

Refer to 'life-span career planning' to enable individuals to manage the inevitability of occupational change. Planning may include on-the-job development opportunities, career planning workshops, individual career counselling and mentor-protege relationships.
Examples:

Refer to agencies that provide employment counselling and referral services.
Agencies:
*Placement 45, Edmonton.
*Opportunity 45, Calgary.
*Access 45, Lethbridge.

IMPLEMENTING STRATEGIES

Strategy: ______________________________

Target Date: ______________________________

Why Do I Need Or Want To Do This? ______________________________

Action Plan:

1. ______________________________

2. ______________________________

3. ______________________________

4. ______________________________

5. ______________________________

Handout #10

EVALUATION OF WORKSHOP

Please take a few minutes of your time to answer the following questions about the workshop. Your responses will be tabulated with those of the other participants in order to assess the value of this workshop and to help plan future sessions.

Use **1-Excellent, 2-Good, 3-Poor** to describe your response to the following:

How helpful was the workshop in:

_____ Increasing your overall knowledge of the trades and technologies.

_____ Providing a comprehensive approach to facilitating access to the trades and technologies.

_____ Increasing your knowledge of demographic and labour market trends.

_____ Developing your awareness and understanding of the barriers confronting individuals wishing to enter the trades and technologies.

_____ Developing a better understanding of your own particular role in helping individuals become successfully employed in the trades and technologies.

How helpful were the following workshop components:

_____ Handouts.

_____ Visual materials.

_____ Small group activities.

_____ Lectures.

Please rate each of the following aspects of the workshop:

_____ Planning and organization.

_____ Overall quality.

_____ Productivity.

Workshop Leader:

_____ Clearly defined the workshop objectives.

_____ Was well prepared and organized.

_____ Answered questions clearly and knowledgeably.

_____ Used a variety of instructional methods (lecture, role play, audio-visual materials, etc.) to address the topics being presented.

_____ Interacted with students.

_____ Used student questions, comments, and suggestions constructively.

_____ Held my interest.

What part of the workshop did you find most useful?

____

____

____

In what ways might the workshop be changed to better meet your needs?

____

____

____

Other Comments:

____

____

____

____

APPENDIX B

INSTRUCTOR'S NOTES

#01 The Alberta Apprenticeship and Trade Certification Program
#02 Trends
#03 Attitudinal Barriers
#04 Linkages

HISTORICAL DEVELOPMENT AND PHILOSOPHY OF APPRENTICESHIP

Historically, apprenticeship training meant that employers hired and indentured apprentices, thereby committing themselves to imparting their knowledge and skills. Such training was mainly on-the-job work experience. However, with the advent of technical training institutes, public colleges, and the organization of apprenticeship, came the systematic training of apprentices. Formalized programs initiated by industry and governed by legislation created the need for the separation of technical areas of trades from practical experience. The outcome was the development of a technical training delivery system. Institutions assumed the responsibility for such training and employers of apprentices kept the responsibility of training apprentices on the job.

In Alberta, employers of journeymen and apprentices drive the apprenticeship and certification system. Members of the Apprenticeship and Trade Certification Board and Provincial Apprenticeship Committees are employers and employees, who participate in identifying the technical content for courses. They set standards for their trades by defining the work and developing regulations and trade examinations.

Alberta's apprenticeship programs train generalists. Such training allows apprentices to develop knowledge and skills wide enough in scope for many types of employment in their field. Specialty training is considered the responsibility of the employer, who assumes the role of imparting knowledge and skills related specifically to his product, methods and procedures.

Goals of Apprenticeship Training

1. To develop within the labour force an adequate supply of qualified tradespeople to meet the needs of Alberta industry.

2. To monitor and maintain standards for the trades designated under the Manpower Development Act and to promote employee and employer participation through education and any necessary enforcement of regulations.

3. To provide industry-initiated technical training and certification programs to Albertans through arrangement with public colleges, technical institutes, and private organizations.

4. To liaise with industry, institutions, agencies, and government departments to maintain effective and efficient programs and services.

THE APPRENTICESHIP AND TRADE CERTIFICATION BOARD

The **Manpower Development Act** (M.D.A.) is the legislation which authorizes the establishment of the Alberta Apprenticeship and Trade Certification Board. The Board consists of the Executive Director of Apprenticeship and Trade Certification and the following members appointed by the Lieutenant Governor in Council:

1. a Chairman;
2. not fewer than 3 members representing employers, and an equal number of members representing employees;
3. one alternate member representing employers and one alternate member representing employees and;
4. additional members representing the general public.

The primary function of the Board is to advise the Minister of Career Development and Employment on all matters affecting the general conditions governing trade training and certification of workers in the designated apprenticeship trades. Some specific functions of the Board are to:

a) review petitions for designation of trades and make recommendations to the Minister;
b) scrutinize recommendations from provincial apprenticeship committees concerning trade regulations and, if acceptable within the parameters of the M.D.A., recommend their adoption by Ministerial Order;
c) approve length and content of training programs on recommendation of the provincial apprenticeship committees;
d) appoint local apprenticeship committee members; and
e) hear and rule on appeals made against decisions of the Executive Director.

In making policy decisions and fulfilling its obligations, the Board draws upon the specific expertise of 53 provincial apprenticeship committees. Membership of the provincial apprenticeship committee includes all local apprenticeship committee members. The Board is thus guided by approximately 800 members representing all areas of Alberta. In addition, the Board has the authority to call public meetings to broaden its input on matters relating to its responsibility under the M.D.A..

Local Apprenticeship Committees - (LAC's)

In regions of the province where activity relating to a trade is considered substantial and industry participation is possible, the Apprenticeship and Trade Certification Board appoints a Local Apprenticeship Committee. Members of these committees are usually nominated by the industry and include:

a) a chairman (departmental personnel acting on behalf of the Executive Director, Apprenticeship and Trade Certification);
b) at least one member representing employers and an equal number representing employees to a maximum of three in each category;
c) technical and other special advisors who provide expertise and assistance to the committee.

Functions of L.A.C.'s include making recommendations:

a) regarding individual apprentices on matters such as credits, transfers, disputes between apprentices and employers, pass-fail decisions, record books, contracts, and certification.
b) to the Provincial Apprenticeship Committees on matters relating to apprenticeship, training and certification for that region.

Provincial Apprenticeship Committees - (PAC's)

These committees are provincial fora made up of all Local Apprenticeship Committees in a particular trade. Additional members appointed by the Apprenticeship Board may include technical and special advisors to provide assistance in carrying out committee duties. The mandate of the Provincial Apprenticeship Committee is to provide a forum to develop policies for recommendation to the Board. Specific responsibilities include:

a) making recommendations to the Board on matters relating to apprenticeship, training and certification, including the revision of trade regulations and course outlines;
b) reviewing training and certification programs to ensure relevance and effectiveness;
c) development and approval of policies of accreditation for technical courses and programs that articulate with the designated trades.

APPRENTICESHIP AND TRADE CERTIFICATION PROGRAMS

Apprenticeship Programs

All trades, with the exceptions of Tool and Die Maker, Projectionist, Plasterer, and Elevator Constructor, have been designated under Division 1 and have formal apprenticeship training programs. Participation in apprenticeship is compulsory in 49 trades designated for apprenticeship training. All trades designated under this Division are also automatically designated under Division 2 unless specifically designated under Division 3.

Certification Programs

1. Designation for Voluntary Certification (Division 2) - establishes a voluntary certification program for a category of trades known as qualification trades. For this category of trades, the Act defines a journeyman as "*a person who is [...] an experienced and skilled worker in the relevant trade whether or not the person holds a Certificate of Qualification for the trade.*" Candidates who meet necessary work experience requirements as specified in Part 2 of the trade regulations, can obtain an Alberta Certificate of Qualification by passing the prescribed journeyman examinations(s). Trades designated under Division 2 (qualification trades) are:

   Agricultural Mechanic
   Appliance Serviceman
   Baker
   Boilermaker
   Bricklayer
   Cabinetmaker
   Carpenter
   Cement Finisher
   Communication Electrician
   Cook
   Locksmith
   Electrical Rewind Mechanic
   Floorcovering Mechanic
   Glassworker
   Crane and Hoisting Equipment Operator
   Instrument Mechanic
   Insulator
   Ironworker
   Landscape Gardener
   Lather-Interior Systems Mechanic
   Machinist
   Millwright
   Painter and Decorator
   Partsman
   Plasterer
   Power Lineman
   Power System Electrician
   Printing & Graphic Arts Craftsman
   Projectionist
   Roofer
   Sawfiler
   Sprinkler Systems Installer
   Steel Fabricator
   Tile Setter
   Tool and Die Maker
   Transport Refrigeration Mechanic
   Water Well Driller

2. Designation for Compulsory Certification (Division 3) - establishes a certification program for a category of trades known as proficiency trades. Any person engaged in the work of these trades must hold an Alberta Certificate of Proficiency, be an indentured apprentice, or have special authorization issued by the Director. Candidates who have developed acceptable and appropriate trade skills to the journeyman level and within Alberta's legislation can obtain an Alberta Certificate of Proficiency by passing the prescribed journeyman examination(s). Those who are unable to pass the examination(s) must indenture as an apprentice, and may write progressive exams to establish their status in the trade. A trade is designated as a proficiency rather than qualification trade if the designation results in a significant measure of public safety and contributes to the general safety of Albertans. Trades designated under Division 3 (proficiency trades) are:

Auto Body Mechanic
Barber
Beautician
Electrician
Electronic Technician
Elevator Constructor
Gasfitter
Heavy Duty Mechanic
Motorcycle Mechanic
Motor Mechanic
Plumber
Recreation Vehicle Mechanic
Refrigeration Mechanic
Sheet Metal Worker
Steamfitter - Pipefitter
Welder

ACCREDITATION

Training programs related to several of the apprenticeship trades are available in Alberta's high schools, colleges, and technical institutes. These courses and programs are **not** part of the apprenticeship system, but individuals who successfully complete them *may* receive time or technical training credits toward an apprenticeship training program *after* they have become a registered apprentice.

The following describes the normal patterns for the allotment of school credits, but some exceptions may exist:

Vocational High School Programs

To be eligible for credit evaluation, students normally need 35 credits in approved trade courses with an overall 100 credits in the high school program and an employer recommendation.

Colleges and Technical Programs

Graduates of pre-employment training courses may receive credit towards apprenticeship for first period technical training and for some time credit. Several one and two year technology programs which are, in some cases, related to an apprenticeship trade, may be considered for accreditation.

*Important

It is essential before enrolling in any apprenticeship-related courses in a high school, college, or technical institute that individuals find out if they will be able to obtain credit toward their apprenticeship program. They should contact the school counsellor or Registrar's office of their college or technical institute, or their local Alberta Career Development Centre.

INTERPROVINCIAL RED SEAL PROGRAM

The Interprovincial Red Seal program is designed to enhance the mobility of journeymen in construction, maintenance, repair, and service trades. The Red Seal establishes a minimum standard of knowledge in those trades where the program has been agreed to by at least six provinces or territories.

Interprovincial examinations can be attempted by graduating apprentices and those who hold a journeyman certificate issued in Alberta or another province that participates in the program. ***The Red Seal is not a certificate***, but is a numbered seal affixed to provincial trade certificates and pocket identification cards. The Interprovincial Red Seal entitles the holder to work in any participating province without having to requalify by examination.

Alberta participates in the Interprovincial program and the following Red Seal trades:

Auto Body Mechanic
Beautician
Boilermaker
Bricklayer
Carpenter
Cook
Electrician
Electronic Technician
Heavy Duty Mechanic
Instrument Mechanic
Machinist
Millwright
Motor Mechanic
Painter and Decorator
Plumber
Power Lineman
Refrigeration Mechanic
Sheet Metal Worker
Sprinkler Systems Installer
Steamfitter - Pipefitter
Welder

JOURNEYMAN CERTIFICATION PROGRAM

Under the Manpower Development Act, a certification program is established for journeyman-level tradespeople. To qualify for certification through this route, applicants must:

1. Provide proof of having acquired the minimum work experience prescribed in the applicable trade regulation;
2. Have developed their trade skills to a journeyman level by a means acceptable within Alberta's legislation;
3. Demonstrate an acceptable standard of competence and skill in their trade by passing the prescribed journeyman examination(s).

The examinations are administered by the regional office, and the Alberta Certificate of Qualification or Certificate of Proficiency is issued to successful candidates.

TRADES RELATED PROGRAMS

Educational Improvement Program

Apprenticeship and Trade Certification sometimes arranges for Mathematics, Science and other required courses at technical training establishments to provide educational upgrading for prospective apprentices who fail to meet apprenticeship entrance requirements. The prescribed apprenticeship entrance examination is administered on the last day of class and finalized at the candidate's regional apprenticeship office.

Journeyman Upgrading Program

Journeyman upgrading courses provide technical training for tradespeople who are eligible for certification in a designated trade, but have not successfully passed the Alberta journeyman examination. The journeyman examination is administered and the candidate's status is finalized at the end of the course.

The amount of training space required is based on the number of applications received through the field offices and the failure rate of candidates who attempt the journeyman examination. A schedule of offerings is developed and distributed with the apprenticeship training schedule.

Journeyman Updating Program

This program is designed to enhance the skills and knowledge of Alberta journeyman-level tradespeople to make them more competitive in the labour market. Due to the effect advancing technology has had on the trades, industry has expressed an increasing concern for the need to update certified tradespeople. Apprenticeship and Trade Certification continues to develop courses to meet these changing needs by providing updating courses at most technical training establishments.

The amount of training space required for updating courses is based on previous course enrollments and the projected needs of industry as identified by field offices and the local and provincial apprenticeship committees. A schedule of course offerings is developed and advertised through newspaper media and promoted through field contact with industry.

Although no examinations are administered for these courses, the institute forwards a mark collection sheet showing the hours attended and credit status of each candidate. Apprenticeship and Trade Certification issues a pocket card to those persons who were registered and credited with having completed an updating course in their trade.

TRENDS

* Demographic and Labour Market Trends

* Goods-Producing and Service-Producing sector

* Aboriginal Peoples

* Women

* Persons with Disabilities

* Immigrants and Visible Minorities

* Older Worker

* Youth

DEMOGRAPHIC AND LABOUR MARKET TRENDS

There are significant changes taking place in the growth and composition of the population. Young people make up a smaller portion of the available labour supply. Older Albertans constitute an increasing proportion of the population. As well, males aged 25 to 44, who have in the past been considered the core of the workforce, continue to represent a significantly smaller proportion of the labour supply. The net effect of these trends is that employers will have to turn to non-traditional sources of labour. It is essential that all Albertans who wish to participate in the workforce are given the opportunity to develop their skills and knowledge in order to make a full and effective contribution to the labour market. Employer, government, community, and educational support for disadvantaged groups is important in alleviating barriers to employment.

The Canadian economy must adjust continually in order to profit from new technological opportunities and new world markets. As in other advanced economies, the Canadian industrial structure increasingly favours service-producing industries over goods-producing industries. In Alberta, economic diversification and rapid growth in the service sector are occurring simultaneously with increased emphasis on exports and global markets and a new phase of development in the forestry and energy industries. Many new jobs are being created in sectors of the economy which rely heavily upon individuals trained in the trades and technologies.

The economy and the labour force are developing along divergent paths, creating a gap between worker skills and the skills required by the economy. Skill requirements are increasing, while the overall quantity and quality of entry-level workers are declining due to a lack of appropriate training. The training that does exist is unevenly distributed among the labour force, which is a threat to the nation as a whole. Literacy research shows that one in four Canadian workers is functionally illiterate, which is a major concern among employers. Canada is also lagging behind other developed nations in academic performance, especially in mathematics and science. It is vital that the future development of the labour force be responsive to the evolving needs of the economy. In turn, the compatibility of the workforce will be determined by society's commitment to quality education and training.

GOODS-PRODUCING SECTOR

* Agriculture & Food Industries Division
* Petroleum & Gas Industries Division
* Forestry & Related Industries Division
* Mining, Fishing & Trapping Industries Division
* Other Processing Industries Division
* Construction Industries Division

SERVICE-PRODUCING SECTOR

* Transportation & Storage Industries Division
* Communication & Other Utility Industries Division
* Wholesale Trade Industries Division
* Retail Trade Industries Division
* Finance & Insurance Industries Division
* Real Estate Operator & Insurance Agent Industries Division
* Business Service Industries Division
* Government Service Industries Division
* Educational Service Industries Division
* Health & Social Service Industries Division
* Accommodation, Food & Beverage Service Industries Division
* Other Service Industries Division

Source: The Alberta Workforce to the Year 2000, Alberta Career Development and Employment, 1989.

ABORIGINAL PEOPLES

Canada's aboriginal peoples remained isolated economically and physically from the rest of the population until the 1970's. Through the efforts of aboriginal leaders, greater awareness was developed of the economic and social inequalities of aboriginal peoples compared to the mainstream. Change is sweeping through the aboriginal population with self-government, reinstatement and funding central to the push for economic and political change. Self-determination is a key word to describe today's effort by aboriginal peoples to take control of their lives.

Alberta's aboriginal population is much younger than the population as a whole and is growing more rapidly. During the 1990's, one in four persons entering the labour force in Alberta will be of aboriginal ancestry. As the aboriginal "baby boom" of the 1970's enters the workforce, significant challenges in relation to job creation, housing, education, social and health services will be created. A coordinated effort is required to address the needs of young aboriginal people who will be entering the labour market before the turn of the century.

Compared with other Albertans, fewer aboriginal people are in the labour force and they are more likely to be unemployed, particularly in rural areas. Aboriginal people who are employed are over-represented in unskilled and low-paid jobs and substantially under-represented in the trades and technologies and other professional occupations. Overall, the aboriginal population is at a disadvantage educationally and this is a barrier to entrance into apprenticeship programs, technical training, and effective labour force participation. In addition, health problems, limited English proficiency and cultural differences impede the success of some aboriginal people in the labour force.

There has been a steady migration of aboriginal people from rural to urban areas which has created its own unique set of concerns. Many living in the cities are faced with great difficulty in finding employment and adequate housing, while those in rural and remote areas are affected by a lack of employment and educational opportunities.

Aboriginal peoples have experienced some positive change in their living conditions in recent years. However, they are still significantly behind Canadians generally. It is essential that career advisors view employment and training in conjunction with demographic, social, economic and cultural concerns which relate to the unique circumstances of aboriginal peoples.

WOMEN

The increasing presence and permanence of women in the labour market is one of the most significant developments in Canadian society over the last thirty years. As the number of single parent families increases, as economic realities necessitate the participation of both spouses in the labour force, and as changing lifestyles make paid employment as permanent a fixture in women's lives as it is for men, that pattern is expected to continue.

The increased participation of women in the labour force could alleviate labour shortages resulting from the diminishing number of entry-age workers. It could also strain the job market's absorption capacity. Women are concentrated in clerical, service, and sales jobs, and some of these areas are diminishing in growth. Because these occupations pay relatively low wages, women's earning power and ability to adapt to economic restructuring is reduced. Another key trend developing in many occupations traditionally held by women is the increase in part-time work. This is accounted for by the introduction of new technology and employers' preference for part-time workers, who often receive less pay, fewer benefits, and usually have no union protection.

As new information technology eliminates tedious clerical tasks, many clerical jobs will become routine, low paying and dead end. One of the major side-effects of this new technology could be a widening of the wage gap between men and women. If the assumptions of Heather Menzies in Women and the Chip are correct, women will in fact be facing increasing unemployment, deskilling of jobs and a lack of opportunity for advancement within "traditional" jobs.

This situation, however, could be prevented by a concerted, conscious effort at redesigning the methods by which new information technology is introduced, and by meeting the needs of women within the labour market in such a way that women will be able to take advantage of the new technology, rather than be displaced by it.

As new technology takes hold over the next decade, skill requirements will continue to change. Career advisors should be encouraging women to benefit from opportunities arising in the trades and technologies. Because of traditional expectations and limitations based on sex roles and social structure, women may face special concerns at work. It is the responsibility of career advisors to recognize these concerns and assist women to be successful in the trades and technologies.

PERSONS WITH DISABILITIES

Many persons with disabilities are not given an equitable opportunity to participate in the labour market because of misconceptions regarding their ability to perform. This inequity is a loss, not only for the prospective employee, but also for the employer and the community as well.

Most people believe they will never experience a permanent disability. However, Canada is among the leading Western nations for the number of work-related accidents. Automobile accidents are the most common source of permanent disability. As well, many Canadians suffer from chronic and degenerative diseases.

It is estimated that by the year 2000, when the "baby boom" will be the "senior boom", there will be one person with a physical disability for every able-bodied person. Comprehensive planning is needed to allow persons with disabilities to become independent full members of society.

Before persons with disabilities can achieve social integration and acceptance, they have many barriers to overcome. Many employers and career advisors may believe that persons with disabilities cannot do meaningful work and that the extent of their potential lies in menial jobs.

Many individuals are well aware that disabilities cause no major problems on the job. The real problem for the person with a disability is not in holding a job, but in getting the job in the first place. The qualified job-seeker with a disability is working against a number of disadvantages, mostly unfounded myths and misunderstandings, which may make employers reluctant to hire. Some unfounded attitudes are that insurance rates will skyrocket, safety records will be jeopardized, other employees and the public will not accept the person with a disability, and that there will be considerable expense in making adjustments to the work environment.

Despite the best intentions, some personnel managers, co-workers, and career advisors are not immune to having mistaken beliefs or prejudices about persons with disabilities. These thoughts are often carried into dealings with disabled people and can have a profound effect on their integration into the workforce. Some individuals hold the attitude that "*if you can't hear, you can't work with a hammer; if you are blind, you can't count; and if you are in a wheelchair, you can't operate a computer*". Enhanced attitudinal and behavioral awareness is essential for effective interaction with persons with disabilities.

IMMIGRANTS AND VISIBLE MINORITIES

Immigration has always played an important role in the development of Canadian society. From the beginning of the 20th Century to 1961, immigration was regarded as necessary to maintain population growth, to enlarge the pool of labour and to create a larger domestic market for new industries. During the 1960's, immigration policy became linked more directly than ever to economic conditions. In 1978, with the new Immigration Act, annual immigration planning levels were set after consultation with the provinces and a review of regional demographic needs and economic conditions. New demographic conditions have led to a re-awakening of the demographic-immigration linkage.

Demographers say that Canada must accept more immigrants in order to offset its declining birth rate. Equally evident is that an increasingly large majority of immigrants will be from Asia and Third World countries. In 1957, 95% of Canada's immigrants were from the United States and Europe. However, in 1987, 76% of immigrants were from Asia, the Caribbean and elsewhere in the Third World. Over the coming decades, the population of Canada will continue to shift from a predominantly European background to one of more diversity.

While many immigrants eventually become well integrated, the experience of some visible minorities has been unsatisfactory. For example, although this group on the average has higher levels of education than the rest of the population, their average incomes are lower.

A first job in Canada is a major milestone in any immigrant's path toward integration. However, for many well educated immigrants, the first job after arrival tends to be in unskilled or semi-skilled occupations, often due to their unfamiliarity with English. Long-term unemployment or under-employment can be difficult to accept. Many feel humiliation and anger during the process of trying to gain recognition for educational credentials, or accreditation by professional bodies. This delays or frustrates effective integration of immigrants and their skills into the economic and social life of Canada.

OLDER WORKERS

The population of Alberta is aging. Employers will soon find it increasingly difficult to fill entry-level positions with young people with new skills. To fill gaps in the workforce, an increasing number of older workers will need retraining and skill development. This will require a change in approach on the part of career advisors and employers, as well as some older workers who question whether retraining is worthwhile.

Some of the barriers that limit workforce participation of older workers include a lack of appropriate job skills, training programs targeting younger workers, and ageist stereotypes. The common stereotypes about older workers are that their attendance is poor, that they lack motivation, that they are prone to accidents on the job, that their intellectual functioning is impaired, and that they are not worth the investment to train.

In fact, older workers' attendance is comparable to that of younger workers. Studies show that older workers are far less likely to change jobs than younger workers. Statistics Canada finds that only five percent of workers aged 45 to 54 change occupations, compared to 20 percent of workers aged 20 to 24. Research has also shown that intelligence remains constant for most persons until at least age 70, and that there is little evidence to suggest any significant change in learning capacity. Older workers also have fewer accidents in situations that require judgement based on experience. As well, older workers demonstrate greater job satisfaction and less stress on the job.

Not all barriers are the result of external discrimination. Some older workers may be genuinely limited in the workforce. Some may be experiencing ill health, limiting their abilities. Some may find their skills made obsolete and may lack the educational background necessary for retraining. Older workers are also less likely to relocate in search of a new job. Because of family or financial commitments, older workers may be less flexible in taking advantage of alternatives such as a return to full-time education.

Employers have an important role to play in meeting the needs of older workers. Undertaking new initiatives may improve productivity and morale. To enable workers to keep their skills current and maintain productivity, employers could expand training and educational opportunities. In turn, career advisors need to provide support services and increased opportunities for workers who are required to change jobs in order to secure long-term employment.

YOUTH

Alberta's population will continue to grow slowly until the end of the century. The baby-boom generation is responsible for declining birth rates, based on a desire to maintain standards of living and a preference for double-income families with fewer children. With slower population growth, young people aged 16 to 24 entering the workforce will make up a smaller portion of the available labour supply. Their share of the labour force fell from 26% in 1971 to 22% in 1986, and is expected to fall even further, to 17% by the year 2000. Young workers have traditionally provided employers with a ready supply of labour, particularly during upturns in the economy. They will not be so readily available in the future, obliging employers to turn to nontraditional sources of labour.

Over the next two decades, a substantial proportion of youth in Alberta will be made up of aboriginal people and immigrants. The aboriginal population is young and represents an important and largely underdeveloped human resource. Many young aboriginal people lack Grade 11 and 12, which is normally a prerequisite for post-secondary education and training. As well, some do not receive adequate instruction in Science and Mathematics. The dropout rate of aboriginal students in junior and senior high school is high. According to the Assembly of First Nations, 20% of aboriginal students complete Grade 12, compared to 75% of other Canadians. A coordinated effort is urgently required to meet the education and employment needs of young aboriginal people.

The median age of Alberta's immigrant population is considerably lower now than at the beginning of the 1980's. There were more immigrants proportionately in the pre-school age and younger working age groups in 1987 than in 1981. Also, each source country's age structure is different and has varying effects on the labour market. As a source of skilled or potentially skilled labour, young immigrants are important to Alberta's economic growth. It is extremely important to remove barriers that restrict young immigrants from entering and remaining in the labour market.

It is an increasing concern that too many young people leave school inadequately prepared for the world of work. Many youth lack the education or skills that are in demand. Literacy research shows that 17% of all Canadian high school students are considered functionally illiterate. The rapid growth of knowledge-intensive industries demands a supply of well-educated and well-trained workers. The challenge for career advisors now is to work towards making such a workforce available to meet present and future needs.

ATTITUDINAL BARRIERS

Attitudinal barriers fall under the category of individual barriers and are among the most resistant to change. They are ways of thinking or feeling often based on untruths which may be accepted early-on in life and accentuated throughout. Due to strong historical roots, many such attitudes may have become ingrained in our society and permeate our way of thinking.

Unrealistic attitudes and opinions have the immediate effect of limiting opportunity and in the long run they may severely damage the self-esteem and world view of the individual. They may include low expectations on the part of the individual themselves, low expectations on the part of the career advisor and a lack of knowledge regarding the individuals' potential and the benefits of hiring them.

Overcoming attitudinal barriers may be the most important initial step in providing individuals with equitable access to a variety of opportunities. Negating attitudinal barriers means: (1) learning to recognize one's own typical reactions to situations which have ethnic, ageist, sexist, or occupational bias overtones; (2) recognizing the negative consequences of expressing these biases; and (3) eliminating, reducing or at least restraining your expression of bias in the career counselling situation.

LINKAGE

Working together - that's what linkage is all about. It is a term used to describe collaborative efforts for resolving problems in delivering education and employment services to disadvantaged groups. Linkages can be thought of as bridges of communication and services among employers, educational institutions, government, and community organizations. A cooperative working relationship can maximize the involvement and concern of the overall community.

A linkage could be a counsellor from Family and Social Services referring a client for occupational testing ... or career advisors talking to employers about their labour market needs. Linkages can take as many styles and formats as one can imagine, and they can involve two agencies, or many working together.

Two common factors that need to be in place are that: (1) all partners want to share in providing services and (2) all partners want to provide improved and more complete services. Developing and maintaining linkages is an ongoing process. Nurturing such relationships requires continual communication.

APPENDIX C

TRANSPARENCIES

Note: To use a transparency, photocopy the relevant page onto transparency paper.

1. Introduction	#01 Purpose
	#02 Objectives
	#03 Career, Occupation, Job
	#04 Disadvantaged Groups
	#05 Aboriginal Peoples
	#06 Persons with Disabilities
	#07 Visible Minorities/Immigrants
	#08 Older Workers/Youth
2. Trades and Technologies	***NO TRANSPARENCIES***
3. Trends	#09 Demographic and Labour Market Trends
	#10 Alberta's Population Distribution: 1966
	#11 Alberta's Population Distribution: 1986
	#12 Alberta's Population Distribution: 2006
	#13 The Middle Aging of the Labour Force
	#14 Aboriginal Peoples
	#15 Aboriginal Apprentices in Alberta
	#16 Women
	#17 Percentage of Women in Alberta's Labour Force
	#18 Occupational Grouping of Women
	#19 Female Journeyman in Alberta
	#20 Female Apprentices in Alberta
	#21 Occupational Grouping of Female Apprentices
	#22 Persons with Disabilities
	#23 Separating Fact from Fantasy
	#24 Immigrants and Visible Minorities
	#25 World Areas: 1977
	#26 World Areas: 1987
	#27 Older Workers
	#28 Youth
	#29 Youth Share of Labour Force
4. Barriers	#30 Attitudinal Barriers Limit Opportunities
	#31 Overcoming Attitudinal Barriers
	#32 Generic Barriers to Success
	#33 Visible Minorities and Immigrants
	#34 Persons with Disabilities
	#35 Aboriginal Peoples
	#36 Women
	#37 Older Workers
5. Strategies	#38 Linkages
6. Conclusion	#39 Summary

PURPOSE

Increase effectiveness of career advisors in assisting clientele:

- ☑ Explore
- ☑ Enter
- ☑ Maintain Successful Employment

In the Trades and Technologies

Objectives

☑ To clarify job options and functions, entry requirements, training and programs related to the trades and technologies.

☑ To identify major demographic and labour market trends, and examine their impact on the individual, his/her employability and the career counselling process.

☑ To define barriers faced by individuals who are exploring, entering or maintaining jobs in the trades and technologies.

☑ To outline intervention strategies to enable individuals to maximize their potential in the trades and technologies.

Career

Past, present and future life/work

Occupation

Group of similar jobs

Job

Specific position held by a person

Disadvantaged Groups

☑ Aboriginal Peoples

☑ Visible Minorities

☑ Immigrants

☑ Women

☑ Persons with Disabilities

☑ Older Workers

☑ Youth

Aboriginal People of Canada

- ☑ Status Indians
- ☑ Non-Status Indians
- ☑ Inuit
- ☑ Metis

Persons with Disabilities

A person with a disability is one whose prospects of securing, retaining, and advancing in suitable employment are substantially reduced as a result of a persistent physical, mental, psychiatric, sensory or learning impairment.

Visible Minorities

Individuals who are considered by themselves or by others, to be of race or colour (i.e., non-white) other than that of the mainstream population of Canada.

Immigrants

New Canadians; individuals not born in Canada but living in Canada with recognized status and the right to work (i.e., landed immigrant, naturalized Canadian citizen.)

Older Worker

Individuals over the age of 45

Youth

Individuals aged 16 to 24

Demographic and Labour Market Trends

☑ Natural population growth is declining.

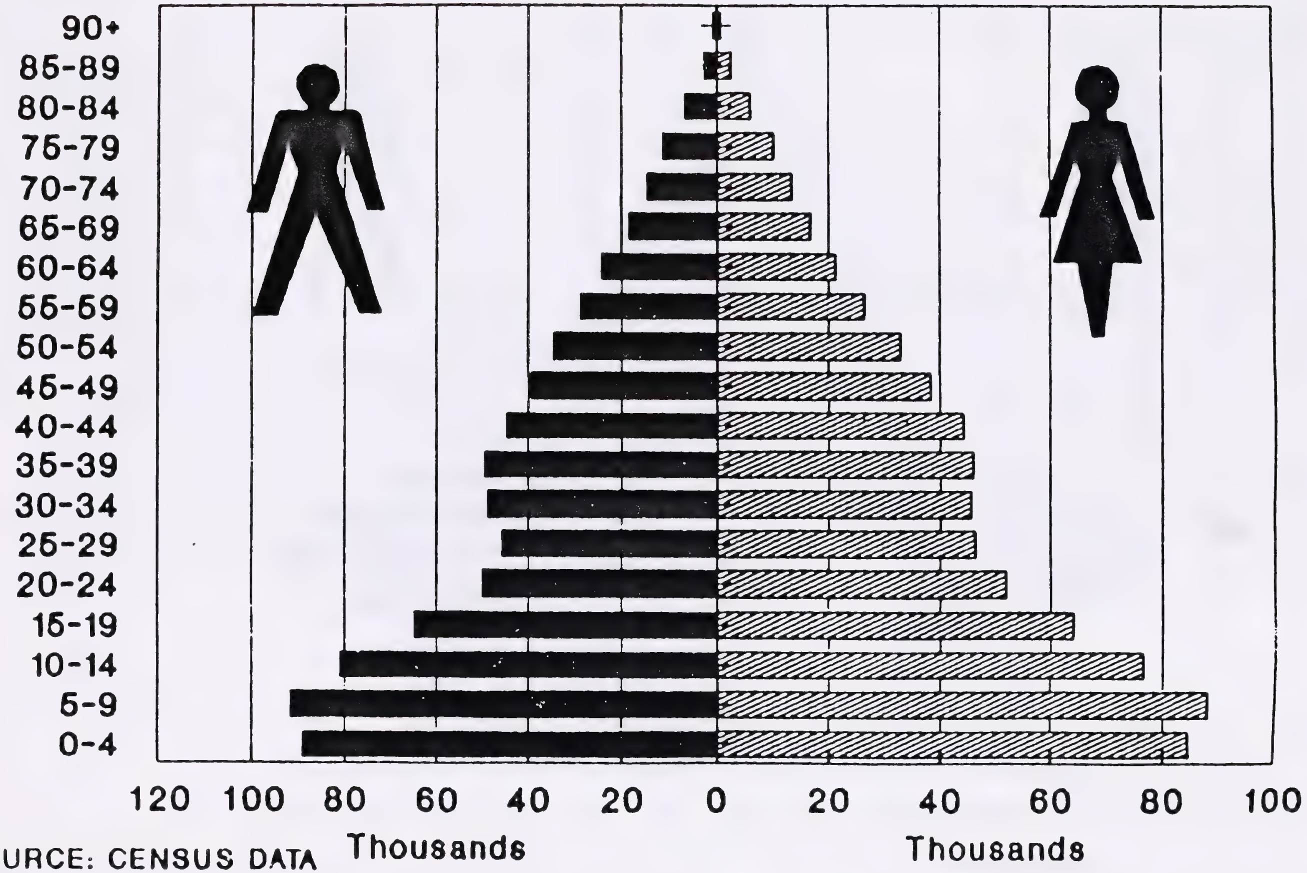
☑ Composition of work force is changing:

- Aging Population
- Sustained growth of female labour force
- Young aboriginal population
- Changing immigration patterns

☑ Shift from resource to knowledge based economy.

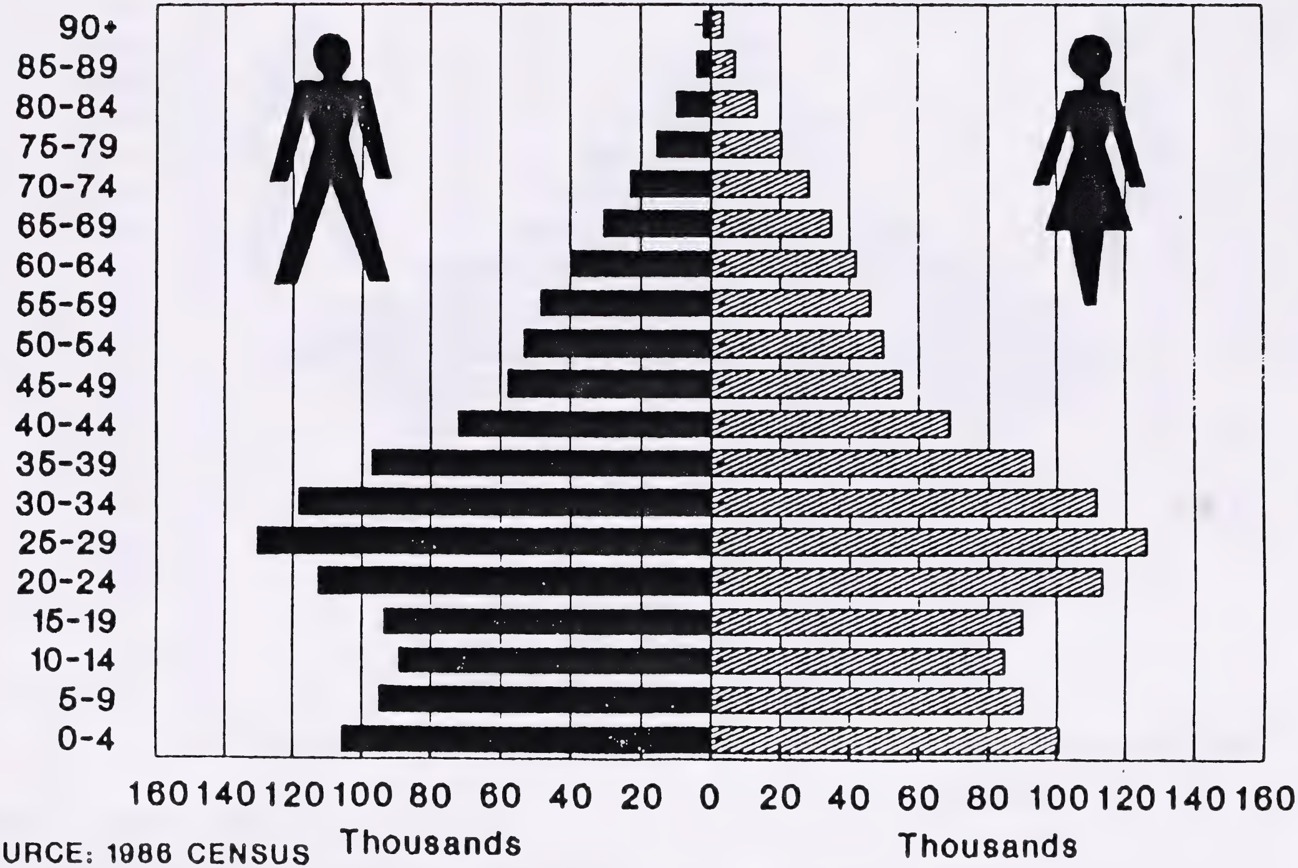
☑ Shortcomings in our educational/ training systems.

ALBERTA's POPULATION DISTRIBUTION
BY AGE AND SEX, 1966



SOURCE: CENSUS DATA

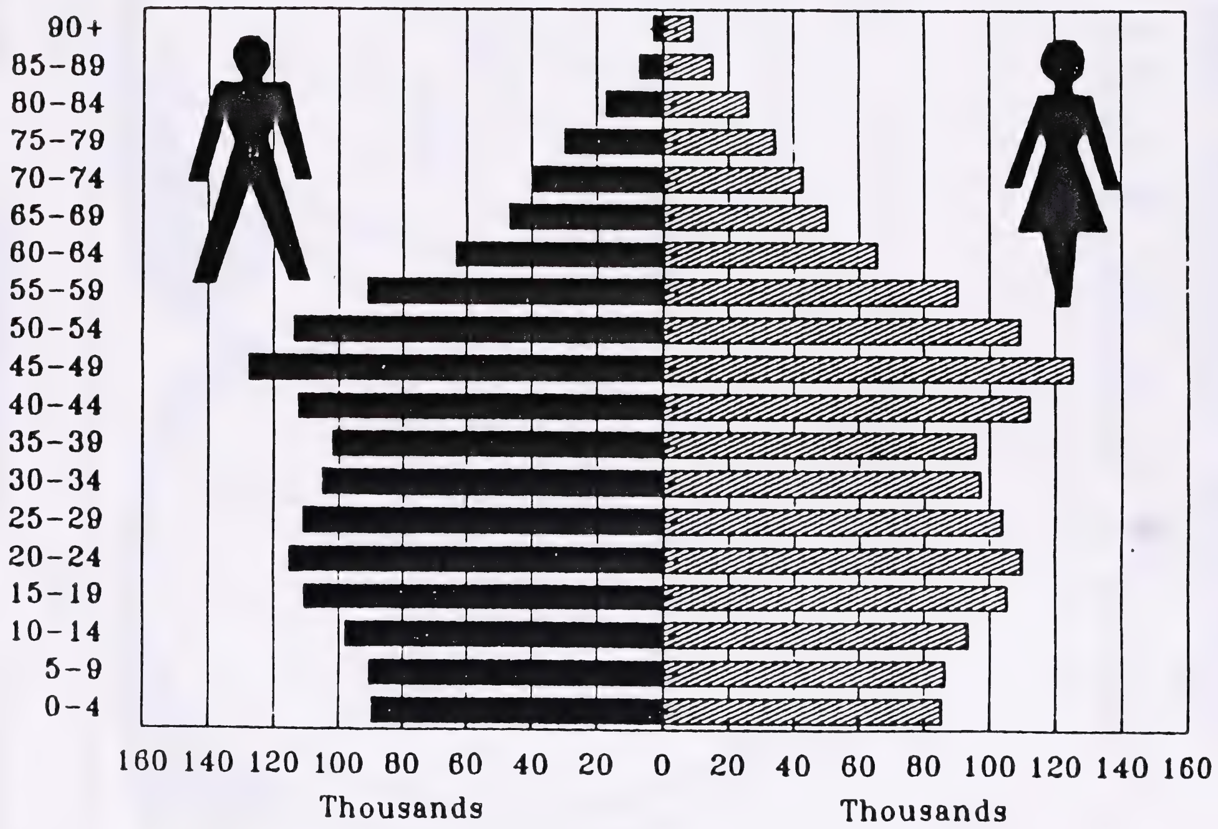
ALBERTA's POPULATION DISTRIBUTION
BY AGE AND SEX, 1986



SOURCE: 1986 CENSUS

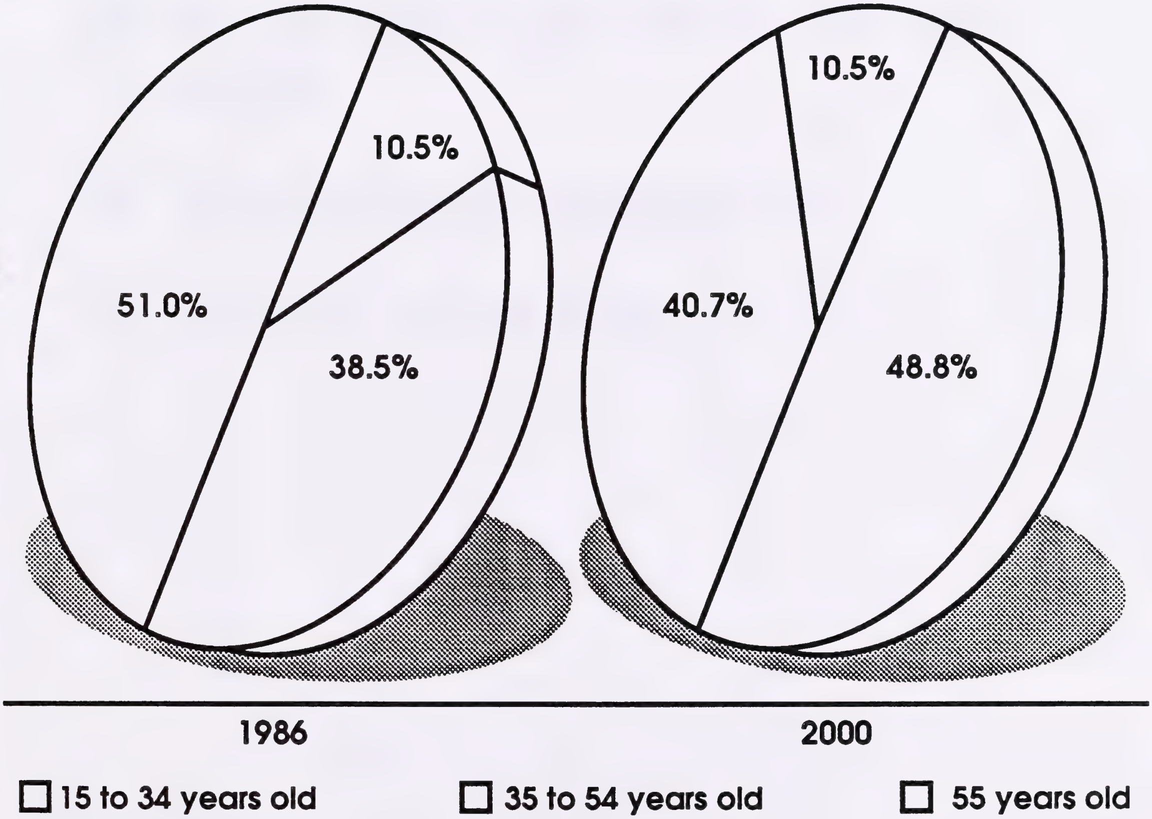
ALBERTA's POPULATION DISTRIBUTION

BY AGE AND SEX, 2006



SOURCE: ALBERTA BUREAU OF STATISTICS
POPULATION PROJECTIONS ALBERTA, 1987-2016

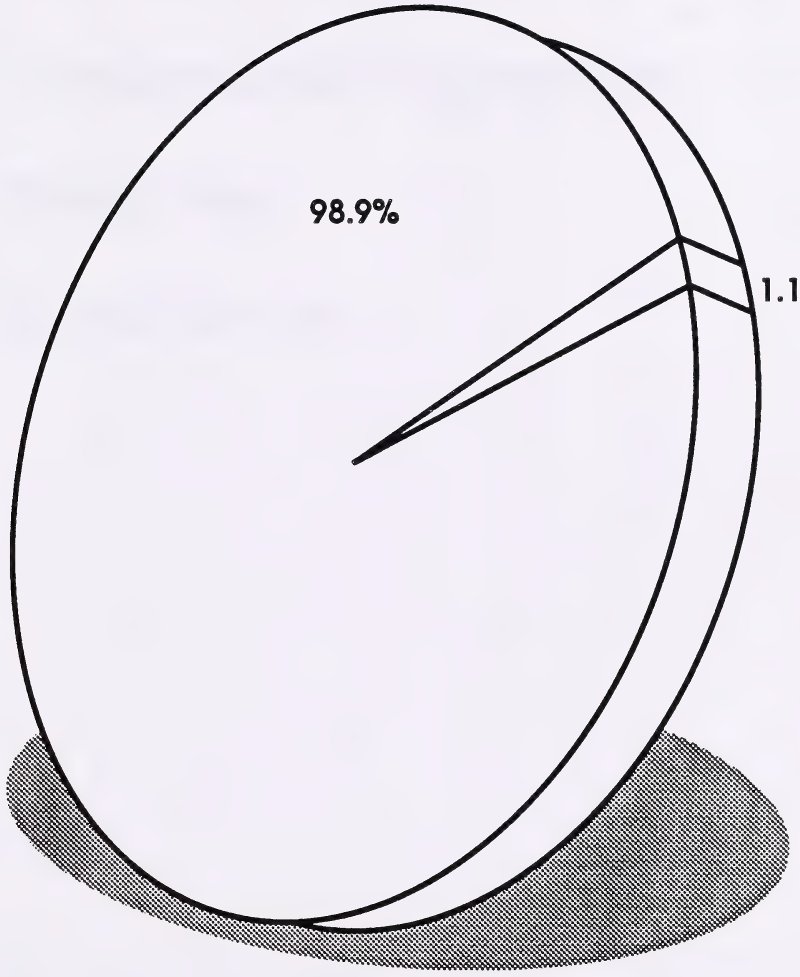
The Middle Aging of the Labour Force



Aboriginal Peoples

- ☑ 25% of the new labour market entrants in the 1990's
- ☑ High unemployment rate
- ☑ Overall lower education and skill levels
- ☑ Occupational segregation
- ☑ Rural to urban shift

Aboriginal Apprentices in Alberta

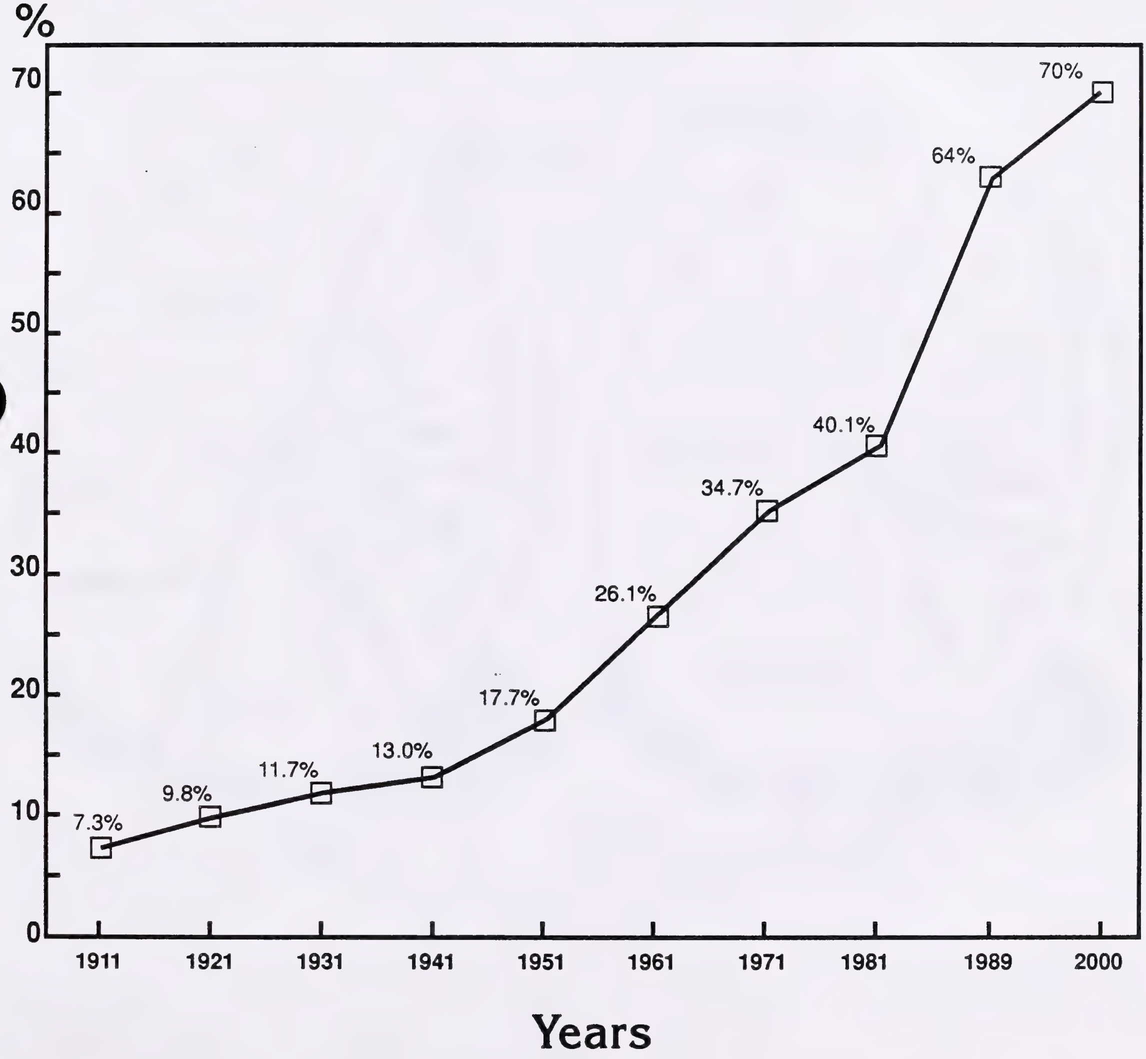


Women

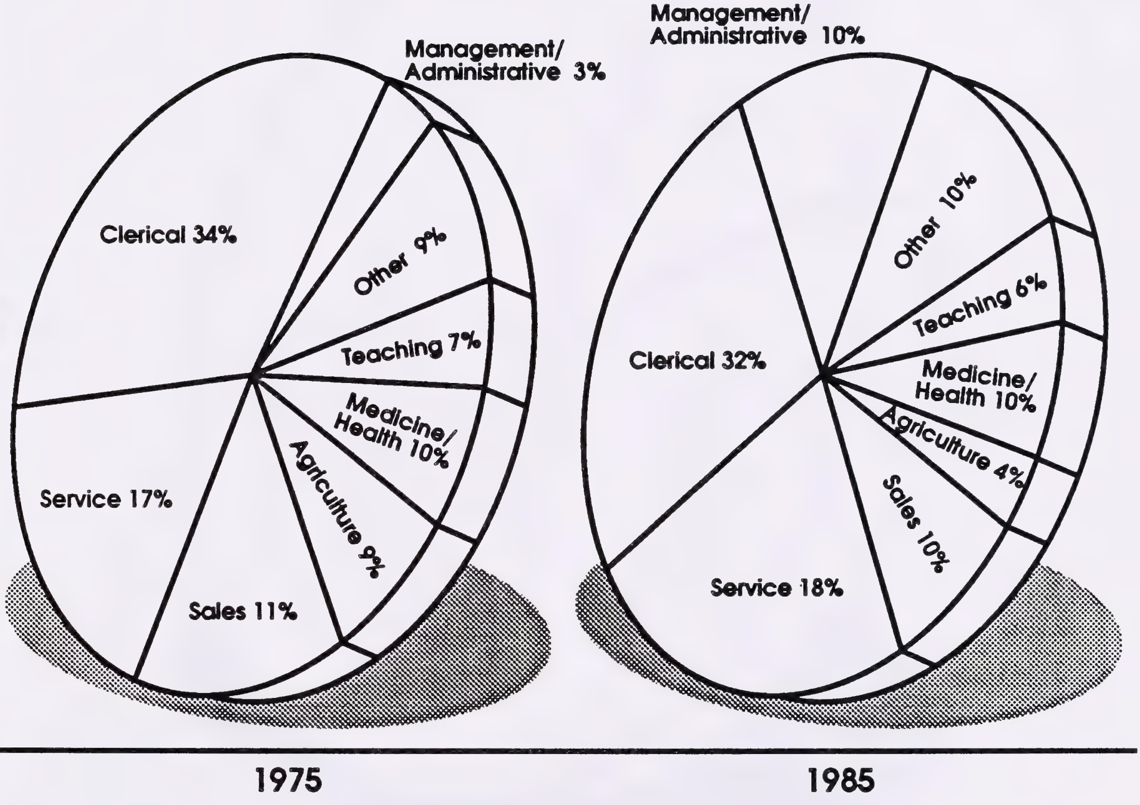
- ☑ Steady, strong increase in labour market participation
- ☑ Occupational Segregation
- ☑ Wage Gap
- ☑ Social Issues

Percentage of Women in Alberta's Labour Force

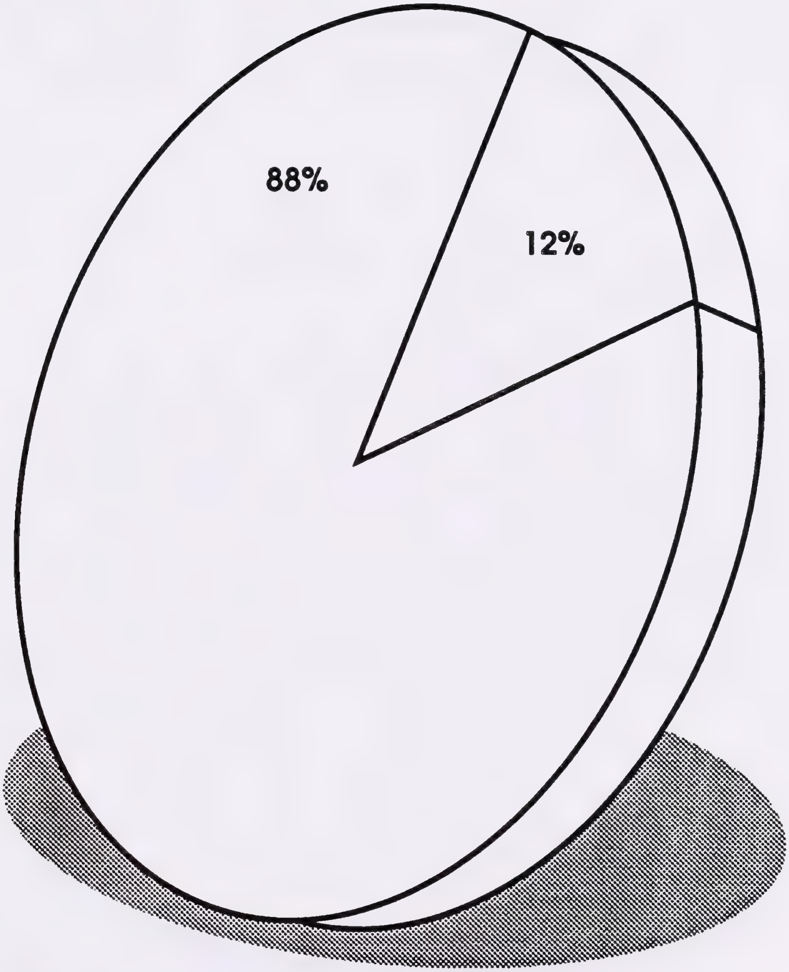
Selected Years, 1911 - 2000



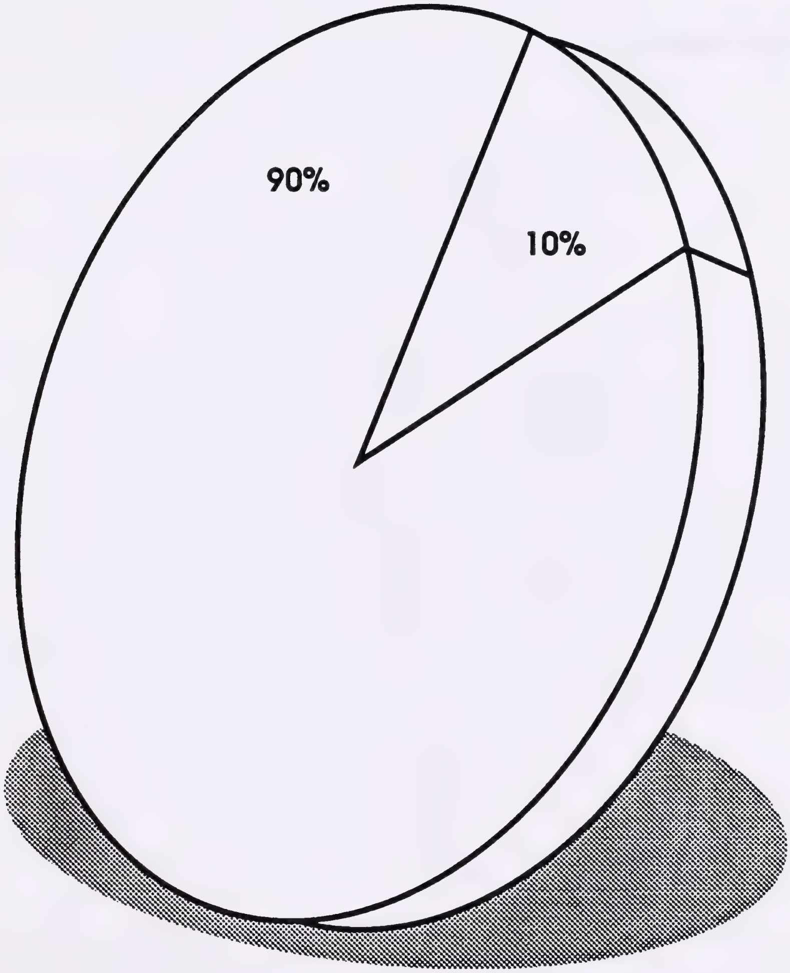
Occupational Grouping of Women in the Labour Market



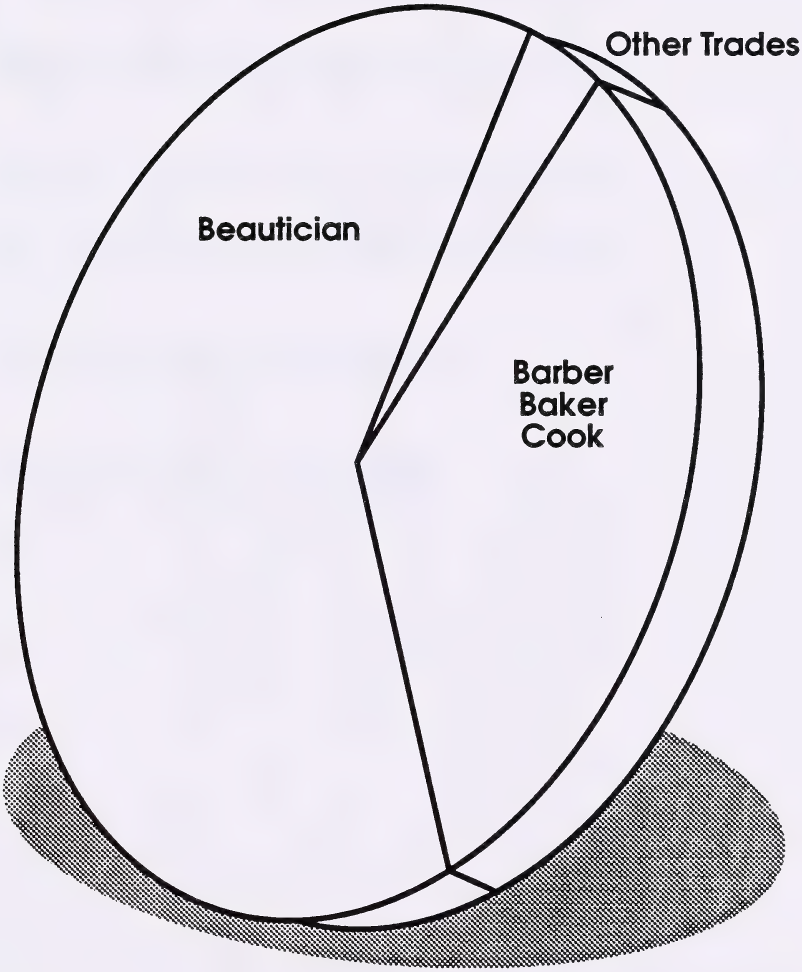
Female Journeymen in Alberta



Female Apprentices in Alberta



Occupational Grouping of Female Apprentices



Persons with Disabilities

☑ Substantial proportion not in labour force

☑ High unemployment rate

☑ Gaps exist regardless of sex, age, or educational attainment

☑ Attitudinal barriers

☑ Unfounded myths

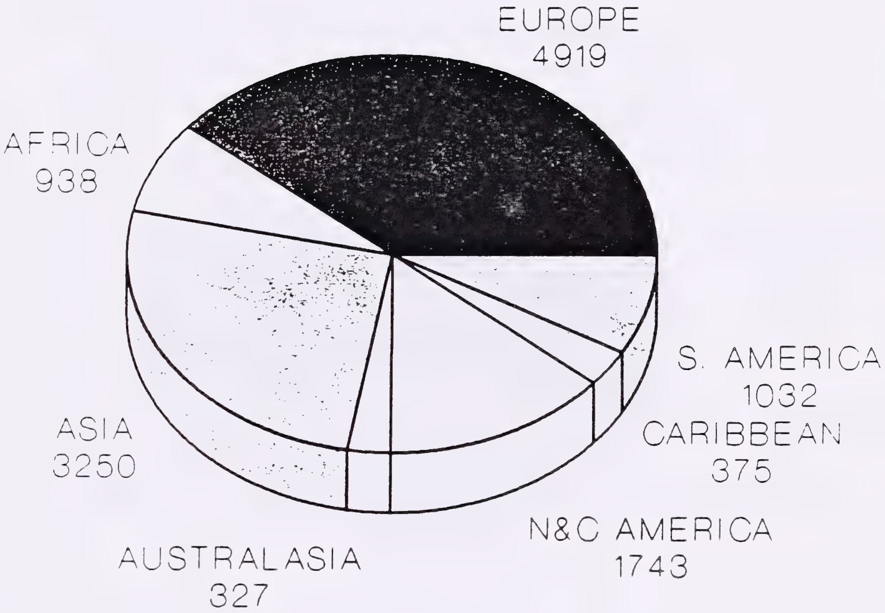
Separating Fact from Fantasy

☑ The Insurance Myth
☑ The Dependability Myth
☑ The Productivity Myth
☑ The Accommodation Myth
☑ The Double-Standard Myth

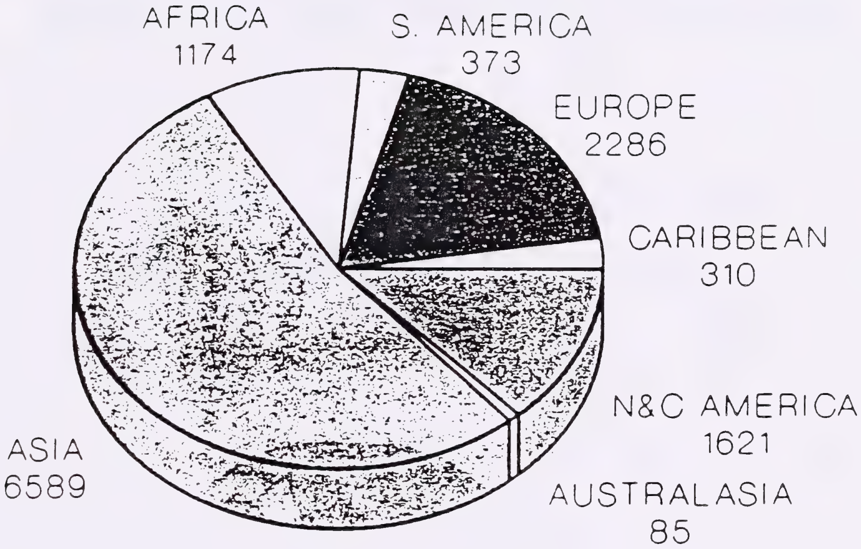
Immigrants and Visible Minorities

- ☑ Changing immigration patterns
- ☑ Underutilization of skills and education
- ☑ Attitudinal barriers
- ☑ Occupational grouping

IMMIGRATION TO ALBERTA (TOTAL 12,694) WORLD AREAS 1977



IMMIGRATION TO ALBERTA
(TOTAL 11,975)
WORLD AREAS 1987



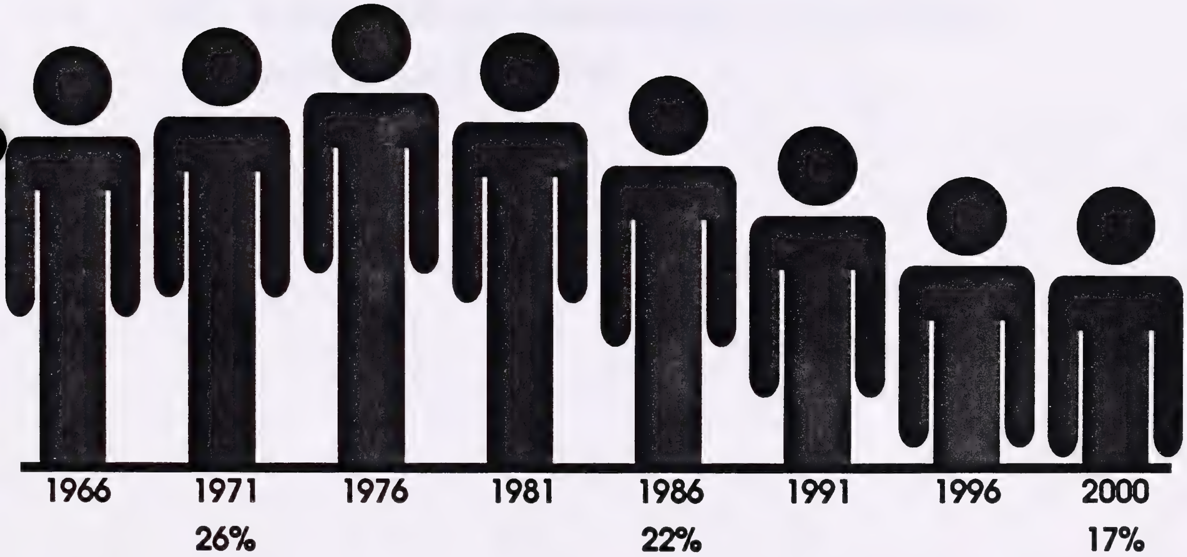
Older Workers

- ☑ Aging Labour Force
- ☑ Myths and Realities
- ☑ Innovative human resource planning and training essential.

Youth

- ☑ Proportion of youth in the workforce is declining
- ☑ Immigrant age structure is young
- ☑ Young aboriginal population
- ☑ Concerns about inadequate educational preparation

Youth Share of the Labour Force, 1966-2000



Attitudinal Barriers Limit Opportunity

☑ Low expectations of individual

☑ Low expectations of career advisor

☑ Lack of knowledge regarding work potential

Overcoming Attitudinal Barriers

- ☑ Examine your typical reactions
- ☑ Recognize consequences of expressing biases
- ☑ Eliminate, reduce or restrain biases

Generic Barriers to Success

☑ Consideration of trades/technologies as occupational choice

☑ Acquisition and completion of apprenticeship employment and training/technological training

☑ Surviving in the trades/technologies

☑ Unrealistic attitudes of career advisor

☑ Lack of support system

Visible Minorities and Immigrants

- ☑ Limited recognition of previous training outside of Canada
- ☑ Proficiency in English
- ☑ Cultural

Persons with Disabilities

☑ Architectural

☑ Educational

☑ Communication Problems

☑ Unrealistic Attitudes

Aboriginal Peoples

- ☑ **Limited employment/training on reserves and isolated communities**
- ☑ **Cultural**

Women

☑ Gender/role perception

☑ Myth that women lack physical strength/stamina

☑ Family responsibilities

☑ Possible math/science limitations

Older Workers

- ☑ Ageism
- ☑ Personal limitations

Linkages

BUSINESS
GOVERNMENT
COMMUNITY AGENCIES
INDUSTRY
EDUCATIONAL INSTITUTIONS

SUMMARY

Demands forecast for trades and technological occupations

Composition and character of labour market is changing

Essential to integrate traditionally under-utilized resources of labour

Coordinated effort required to train and maintain skilled workers

APPENDIX D

TECHNICAL OCCUPATIONS

OCCUPATION	*CCDO NUMBER*
Aircraft Maintenance Engineer	8582-110
Broadcast Maintenance Technologist	8535
Chemical Engineering Technologist	2165-118
Computer Service Technologist	8536-122, 8535
Electronic Technician/Service Technician	2165-230
Interior Design Technician	3313-114
Laser Technician	8335-119
Materials Engineering Technologist	2165-146
Petroleum Engineering Technologist	2165-266
Survey Technologist	2161-118,-122

This appendix contains profiles of ten of the most active technology occupations in Alberta, as of Spring 1990.

Occupational Profiles of other technical occupations may be obtained by contacting any Career Development Centre or by phoning the **Career Hotline**: *Dial 0 and ask for* **Zenith 22140**.

Profiles of trade occupations can be found in the booklet: **Alberta's Apprenticeship Program**, *available from Career Development Centres.*

Occupational
Profile

Alberta
CAREER DEVELOPMENT
AND EMPLOYMENT

AIRCRAFT MAINTENANCE ENGINEER (AIRCRAFT MECHANIC)

Trades and Technical Occupations
8582-110

Aircraft maintenance engineers service, repair and overhaul aircraft, and their power plants to keep them airworthy. Their duties include repairing, replacing, assembling and installing airplane parts, testing the operation of the aircraft and its systems to locate the source of a malfunction, inspecting parts for wear or other defects, basic trouble-shooting of electrical and avionics systems, and performing routine maintenance such as changing the oil and cleaning the screens.

Most airline companies require aircraft maintenance engineers to work shifts with rotating days off. Some airlines schedule the majority of aircraft maintenance time between midnight and six in the morning when air traffic is lightest and aircraft are available for servicing. In smaller companies, aircraft maintenance engineers may be "on call". Overtime is common.

Qualifications

Aircraft maintenance engineers must have good eyesight and hearing, and be physically fit with good muscular coordination. They must be meticulous, accurate to the smallest detail, and orderly in the manner in which they perform their duties. They also must be able to interpret and write instructions and read blueprints accurately.

The basic requirement to become a licenced aircraft maintenance engineer in Canada is three years of on-the-job training with someone who holds an Aircraft Maintenance Engineer (AME) licence in an appropriate category. After this training period, an application for licencing plus proof of experience must be submitted to Transport Canada before the applicant is allowed to write the licencing examination. All applicants must be at least 21 years of age, Canadian citizens or legally landed immigrants who are able to meet Canadian licencing requirements, and be able to read the examination questions and write the answers, without assistance, in either English or French. The questions on the examination cover knowledge of airframes, aircraft power plants, propellers, avionics and Canadian civil air regulations and certification procedures.

Employers generally prefer to hire graduates of Transport Canada approved training programs. The Southern Alberta Institute of Technology (SAIT) in Calgary offers a two-year Aircraft Maintenance Engineers Technology program that is approved by Transport Canada and reduces the licensing experience requirement by 18 months. Applicants must have at least Grade 12 or equivalent education including Math 30 or 33, Grade 12 English, and a Grade 12 science.

There are several categories of AME licences, each with different requirements. An aircraft maintenance engineer may hold a licence in any or all of the categories. To remain valid, the licence must be renewed every five years.

AME - Category A

Three years of satisfactory employment with an aircraft company, six months of which must have been acquired within the two years immediately preceding the date of application, or 18 months of satisfactory employment with an aircraft company provided the candidate can furnish documentary evidence indicating the satisfactory completion of a basic aircraft maintenance course approved by Transport Canada.

AME - Category B

Five years total aircraft experience including 24 months experience on the major repair or overhaul of airframes. Six months of the total experience requirement must have been acquired within the two years immediately preceding the date of application.

AME - Category D

Three years total of aircraft maintenance experience including 24 months of experience in the overhaul of aircraft engines. Six months of experience must have been acquired within the two years immediately preceding the application.

AME - Category P

Three years total of aviation maintenance experience including 24 months in the overhaul of propellers. Six months of experience must have been acquired within the two years immediately preceding the date of application.

AME - Category R

Three years total of aircraft maintenance experience including 12 months of rotorcraft maintenance. Six months experience must have been acquired within the two years immediately preceding the application. Up to nine months of experience credit can be acquired by attending a rotorcraft conversion course approved by Transport Canada.

AME - Category E

Three years total of aviation maintenance experience including 12 months on installed avionics equipment. Applicants must also have completed an acceptable electronics course. Six months of the experience must have been acquired within the two years immediately preceding the application.

Employment and Advancement

The majority of aircraft maintenance engineers are employed by large and small air carriers, and maintenance firms. Most companies want a minimum education of high school graduation with physics, chemistry and mathematics. A willingness to relocate is an employment advantage. Current employment opportunities for aircraft maintenance engineers are excellent and forecasts of future demand indicate that there will be a serious shortage of qualified applicants by 1993.

Many companies provide ongoing compulsory and voluntary training courses to assist their aircraft maintenance engineers to upgrade and update their qualifications.

Salary

Salary depends on several factors such as the size and policies of the employing organization, location, and the type and quality of equipment and aircraft. Salaries for new airline employees range from $18,000 to $26,000 a year.

Other Sources of Information

Contact People

Superintendent, Standards and Continuing
Airworthiness, Aviation Regulation Western
Region, Transport Canada, 11th Floor,
9700 Jasper Avenue, EDMONTON, Alberta,
T5J 4E6.

Associations and Unions

Aircraft Maintenance Engineers Association
Western Region, Box 16, 575 Palmer Road NE,
CALGARY, Alberta, T2E 7G4.

Printed Material

Occupational Information Monograph, *Aircraft Maintenance Engineer (Aircraft Mechanic)*, Guidance Centre-OISE Press, 252 Bloor Street West, TORONTO, Ontario, Canada M5S 1V5.

For further information on career planning, occupations and educational programs, contact the nearest Career Development Centre (see the "Government of Alberta" listings in the telephone directory) or telephone the Career Information Hotline at Zenith 22140 (in Edmonton call 422-4266). Hearing impaired individuals can reach the Hotline by calling 1-800-232-7215 for message relay (in Edmonton call 422-5283).

1989

BROADCAST MAINTENANCE TECHNOLOGIST

Trades and Technical Occupations
8535

Broadcast maintenance technologists install, inspect, modify, repair, and maintain radio and television broadcasting systems under the supervision of a senior technologist or chief engineer. These systems may include AM, FM, and TV broadcasting networks, cable television systems, transmitters and rebroadcasting facilities, and studio equipment such as switchers, videotape recorders, cameras, and amplifiers.

All audio, video, mechanical, electrical, and other technical equipment in the studio and at remote or transmitter facilities must be regularly tested, adjusted, cleaned, inspected for defects and, if necessary, repaired and restored to proper operating condition. The duties of broadcast maintenance technologists may include the construction, assembly, wiring, and installation of such items as panels, chassis, and cabinets. They may also assist in the building and/or modification of special broadcast equipment. They are responsible for ensuring that the power levels and frequency of the station's broadcast signal meets government regulatory requirements, and that it is consistently clear and reliable.

Depending on the size of the broadcast company, maintenance technologists may divide their time between repairing and maintaining equipment at the station and visiting the transmitter(s), or they may work exclusively at the station, mobile trailers, or at transmitter and rebroadcast facilities. Technologists who work for a broadcast company with a large number of rebroadcasting facilities may be required to travel extensively to visit all of these facilities.

Maintenance technologists usually work shifts with varying days off. They may be required to remain on stand-by (either remaining in reach of a telephone or carrying a paging device) during their time off in case any emergency repairs are needed at either the station or transmitter facilities.

Qualifications

Broadcast maintenance technologists should have a mechanical aptitude and keen interest in electronics. Since they frequently work with small hand tools and electronic test equipment, manual dexterity as well as good vision and hearing are necessary. They also should have good colour perception.

Broadcast maintenance technologists need a minimum of two years of post-secondary training in electronics at a recognized technical institute. The Southern Alberta Institute of Technology (SAIT) in Calgary offers a two-year Broadcast Electronics Technology program. The basic entrance requirement is an Alberta high school diploma or equivalent with at least a C standing in English 30 or 33 and Grade 12 mathematics.

After they are hired, all inexperienced broadcasting maintenance technologists receive some further training on the job.

Employment and Advancement

Employment opportunities are good; there is a current demand for qualified broadcast maintenance technologists.

With experience, broadcast maintenance technologists can become chief engineers in large broadcast companies. There are also opportunities for qualified maintenance technologists outside the broadcast industry. Maintenance technologists with a general electronics diploma who are willing to take extra courses, if required, can obtain employment in areas such as computer operations and telecommunications.

Salary

The starting salary for broadcast maintenance technologists varies depending on experience and training as well as the size of the broadcast company. Inexperienced broadcast maintenance technologists with technical training start at between $21,000 and $28,000 a year. Senior maintenance technologists may earn in excess of $60,000 a year.

Other Sources of Information

Contact People

Program Supervisor, Electronics Department,
Southern Alberta Institute of Technology (SAIT),
1301 - 16 Avenue N.W., CALGARY, Alberta,
T2M 0L4.

For further information on career planning, occupations and educational programs, contact the nearest Career Development Centre (see the "Government of Alberta" listings in the telephone directory) or telephone the Career Information Hotline at Zenith 22140 (in Edmonton call 422-4266). Hearing impaired individuals can reach the Hotline by calling 1-800-232-7215 for message relay (in Edmonton call 422-5283).

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Occupational Profile

Alberta
CAREER DEVELOPMENT
AND EMPLOYMENT

CHEMICAL ENGINEERING TECHNOLOGIST

Architecture, Environmental Planning, Engineering,
and Related Technologies Occupations
2165-118

Chemical engineering technologists work closely with chemical engineers; assisting them in both the design of equipment, and in the development of processes required for the commercial production of the chemical products that have been discovered in the research laboratories. Their knowledge and skills may be applied to resolving process and production problems; designing new plants and processes; evaluating the economic and technical feasibility of modifying, replacing, or installing new plant equipment; and training and supervising operators on the production line. They may also assist in evaluating and redesigning processes or equipment presently in use in chemical manufacturing plants. By observing operations in the plant (both process and equipment), technologists establish standards and specifications for operating procedures. Specific assignments may require the technologist to work either at the drawing board, or to operate small scale models of equipment (prototypes) while designing or evaluating manufacturing processes or equipment. Using computers to assist in the design of a new plant or to monitor operations in a new production facility may also be part of their jobs.

Unlike the chemical laboratory technologist whose work is chiefly concerned with the characteristics and properties of chemical products, the chemical engineering technologist is primarily concerned with the processes and equipment involved in manufacturing of those products. In new product development, however, there may be an overlap in duties between these technologists. At that stage both may perform similar tasks such as setting up testing apparatus and preparing chemical solutions for use in the manufacture of the product. Both chemical laboratory technologists and chemical engineering technologists may find work as technical writers or as salespersons for chemical products.

For specific information about chemical laboratory technology, see the *Chemical Laboratory Technologist* profile in Physical Sciences profile package.

Qualifications

A solid background in chemistry, physics, and mathematics is necessary for work in this area. Attention to detail, persistence, and accuracy are also essential skills. Problem-solving skills are important assets.

The minimum educational requirement for working as a chemical engineering technologist is a related diploma of technology. The Northern Alberta Institute of Technology (NAIT) in Edmonton and Southern Alberta Institute of Technology (SAIT) in Calgary both offer two-year diploma programs relating to chemical technology but the programs have different orientations. Both NAIT and SAIT, offer Chemical Technology programs directed toward preparing chemical laboratory technologists with the broad theoretical background needed to work in a laboratory or with professional chemists in a wide variety of industry and research environments. NAIT'S programs in Petrochemical Engineering Technology and Petroleum Engineering Technology may provide appropriate training for chemical technologists who wish to work in petroleum-related chemical production. The Southern Alberta Institute of Technology (SAIT), however, offers a two-year diploma program in Chemical Engineering Technology designed to prepare chemical engineering technologists to work in production and in the development of process equipment in various chemical-related industries. The educational prerequisites for this program include an Alberta high school diploma with credit in a Grade 12 English and mathematics, or successful completion of the Pre-Careers program at SAIT. Mature students may be admitted with different qualifications.

Upon completion of training, the chemical engineering technologist is eligible for certification by and membership in the Canadian Society of Chemical and Biochemical Technology. This society is a constituent member of the Chemical Institute of Canada which represents the interests and needs of chemical technologists, chemical engineering technologists, chemists, and chemical engineers throughout Canada.

After two years of successful experience in industry, a graduate may seek certification with the Alberta Society of Engineering Technologists (ASET). Student memberships to ASET are also available. In Alberta, the Alberta Society of Engineering Technologists certifies individuals as technicians and technologists. They accept as members only those who meet their requirements of education and experience. Because standards are high, membership in this association is often used by employers and governments as a guarantee of competence. The designation "CET" (Certified Engineering Technologist) can be used only by members of ASET and other provincial associations which are constituent members of the Canadian Council of Engineering Technicians and Technologists (CCETT).

Employment and Advancement

Chemical engineering technologist graduates most often work as part of engineering teams in engineering departments or firms, but they may also work in labs, pilot plants, or chemical manufacturing plants. Typical employers include petroleum and natural gas industries; tar sand and heavy oil extraction plants; and chemical, fertilizer, and petrochemical production facilities. The coal industry may also be a potential employer for technicians interested in working in coal preparation plants and research into coal gasification. Other employers may include synthetic textiles, pulp and paper, and pharmaceutical manufacturers.

Engineering technologists are part of a steadily expanding occupational group. Because of the wide variety of situations where their skills are applicable, there is a demand for these technicians. Growth and demand for chemical engineering technologists is occurring particularly in the biotechnology and biomedical fields. Research and development companies also require increasing number of chemical technologists.

Experienced chemical engineering technologists may find work as senior technical supervisors or as staff supervisors. Some chemical engineering technologists take additional training and teach in technical institutes.

Salary

Starting salaries for beginning chemical engineering technologists range from $11,400 to $18,300. Experienced chemical engineering technologists average about $32,000 a year.

Other Sources of Information

Contact People

Executive Director, Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Albert
T5J 2Z2.

Program Supervisor, Chemical Engineering Technology Program, Southern Alberta Institute of Technology, 1301–16 Avenue, NW, CALGARY, Alberta, T2M 0L4

Associations

Alberta Society of Engineering Technologists,
1520 Royal Trust Tower, Edmonton Centre,
EDMONTON, Alberta, T5J 2Z2.

Canadian Advanced Technology Association,
803, 275 Slater Street, OTTAWA, Ontario,
K1P 5H9.

Canadian Council of Technicians and
Technologists, 807, 880 Wellington, OTTAWA,
Ontario, K1R 6K7.

Canadian Society for Chemical Technology, 1785
Alta Vista Drive, OTTAWA, Ontario, K1G 3Y6.

Printed Materials

Printed Materials

Accredited Canadian Technology Programs (booklet), Canadian Council of Technicians and Technologists, 807, 880 Wellington, OTTAWA, Ontario, K1R 6K7.

ASET (brochure), Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Canadian Chemical News, Chemical Institute of Canada, 1785 Alta Vista Drive, OTTAWA, Ontario, K1G 3Y6.

Careers Canada, *Technicians in Science and Engineering*, Printing and Publishing, Supply and Services Canada, HULL, Quebec, K1A 0S9.

Technology Alberta (journal), Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Why Engineering Technology? Why Not? (pamphlet), Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Career Information Hotline

For further information on career planning, occupations, and educational programs contact the Career Information Hotline at Zenith 22140 (in Edmonton call 422-4266).

1988

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COMPUTER SERVICE TECHNOLOGIST

Trades and Technical Occupations
8536-122, 8535

Computer service technologists install, service, repair, and design computer systems. A computer system consists of an electronic computer and peripherals such as disk drives, tape drives, video monitor, keyboard, and printer.

When new equipment is being installed in an office, a computer service technologist lays the cable, checks the equipment for shipping damages, hooks up the electrical connections, and tests the equipment to ensure that it is in working order. Technologists also make customer service calls to diagnose electronic failures in computer systems, to install upgraded components, and to repair or replace defective components. They keep records of maintenance and repairs on the computer systems they service, and analyze customer equipment performance records.

Working with customer service personnel, computer service technologists field test new equipment and report the results to engineering and manufacturing personnel who make whatever design or production modifications may be necessary. While on customer service calls, they listen to customer complaints, try to correct the problems, and offer technical advice on the computer systems. Technologists may be responsible for keeping their own time and expense reports, and maintaining a parts inventory.

Computer service technologists usually work in clean, well-ventilated surroundings. They occasionally may have to lift and carry mini-microcomputers or peripherals. A 40-hour week is standard, but computer technologists may be on 24-hour call and may have to work overtime when a system malfunctions.

Qualifications

Computer service technologists need good technical and electronic diagnostic skills. Good interpersonal skills are also required because technologists are representatives of their companies and must deal directly with customers in problem situations. A pleasant personality and neat appearance are considered definite assets.

Computer service technologists require a minimum of two years training in basic electronics from a technical institute to qualify for a technical trainee position. The Northern Alberta Institute of Technology (NAIT) in Edmonton and the Southern Alberta Institute of Technology (SAIT) in Calgary both offer two-year programs in Electronics Engineering Technology. The admission requirement to NAIT is a high school diploma with credit in Math 30 or 33 and a Grade 12 science such as physics, chemistry or biology, or successful completion of the Pre-Technology program at NAIT. The admission requirement to SAIT is a high school diploma or equivalent with a “C” or better in Grade 12 mathematics (Math 30 and 31 are recommended), or successful completion of the Pre-Careers program at SAIT. Lethbridge Community College offers a two-year Electronics Engineering Technology program which requires a high school diploma with Grade 12 mathematics for admission. Grade 12 physics, English 30, and Math 30 and 31 are recommended. The Westerra Institute of Technology in Stony Plain offers a two-year Computer Engineering

Technology program which requires a high school diploma with Math 30 or 33, English 30 or 33, and a 30-level science such as biology, chemistry, or physics. Preference is given to applicants who have credit in Math 31 and Physics 30.

After being hired, computer service technologists may be given further training, both in the classroom and on the job. The Alberta Society of Engineering Technologists grants the designation "Certified Engineering Technologist (CET)" to graduate technicians and technologists who meet their requirements for education and have two years of successful work experience in industry.

Employment and Advancement

Computer service technologists are employed by computer manufacturers in their service departments and product centres. At the time of writing, there is a demand for service technologists and the demand is expected to continue until the mid-1990's.

Service technologists are usually promoted from within the company. A technologist can be promoted within the service department or transferred to positions in manufacturing, sales, or research. Experienced technologists with advanced training can become technical specialists and work with engineers in designing equipment. Technologists with leadership abilities can advance to supervisory or service management positions.

Salary

The starting salary for a computer service technologist is approximately $18,000 a year. An experienced service technologist with advanced training can earn up to $30,000 annually.

Other Sources of Information

Contact People

Assistant Program Head, Electronics Engineering Technology, Northern Alberta Institute of Technology (NAIT), 11762-106 Street, EDMONTON, Alberta, T5G 2R1.

Electronics Chairman, Office TE-1245, Lethbridge Community College, LETHBRIDGE, Alberta, T1K 1L6.

Program Head, Computer Engineering Technology, Westerra Institute of Technology, Box 5000, 4813-47 Avenue, STONY PLAIN, Alberta, T0E 2G0.

Associations

Alberta Society of Engineering Technologists, Suite 1520, Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

The Computer Society of the Institute of Electrical and Electronics Engineers, 7061 Yonge Street, THORNHILL, Ontario, L3T 2A6.

For further information on career planning, occupations and educational programs, contact the nearest Career Development Centre (see the "Government of Alberta" listings in the telephone directory) or telephone the Career Information Hotline at Zenith 22140 (in Edmonton call 422-4266). Hearing impaired individuals can reach the Hotline by calling 1-800-232-7215 for message relay (in Edmonton call 422-5283).

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ELECTRONIC TECHNICIAN

Trades and Technical Occupations
8535, 8537

Electronic technicians repair radio and television receivers and other electronic equipment such as stereo components, electronic calculators, two-way radio communication systems, video and audio tape recorders, home computers and security systems. Some technicians specialize in repairing one type of electronic equipment; others repair several types.

To find the source of a malfunction, electronic technicians talk to customers, then conduct routine checks. When routine checks fail to locate the trouble, electronic technicians refer to wiring diagrams and service manuals for instructions. They must know the capabilities and limitations of test instruments such as voltmeters, oscilloscopes, signal generators, and frequency counters to work out test procedures to isolate and pinpoint defective components. To make repairs, they must be familiar with many different combinations of circuits and components, and have a thorough understanding of the application of electrical theory to radio, television, and electronic equipment.

Electronic technicians generally work a 40-hour week with occasional overtime required. For customer convenience, they may have to do some evening or weekend work. Some technicians travel to customers' locations to make routine repairs and transport faulty equipment back to the shop if necessary, but the work is otherwise indoors in comfortable surroundings. Electronic technicians generally work alone with little supervision.

Qualifications

In Alberta, an electronic technician must have a journeyman certificate or be a registered apprentice.

To enter the Alberta Apprenticeship and Trade Certification program for apprentice electronic technicians, applicants must have Grade 10 with a "B" standing in Math 10 or equivalent (or pass an entrance exam), and must find an appropriate employer who is willing to hire and train an apprentice. Many employers require higher education such as graduation from high school or a related technical institute program. Mechanical aptitude and mathematical ability are particularly important. To register, the apprentice and the employer complete an application form together and submit it to the closest Alberta Career Development Centre. Once the application is approved, a contract is drawn up and signed by the apprentice and the employer.

The term of apprenticeship is four years (four 12-month periods of not less than 1800 hours of employment each). In addition to on-the-job training, the term includes 12 weeks of classroom training in each of the first and second years, and six weeks in each of the third and fourth years. An applicant who has successfully completed related courses of study or work experience, and has the employer's recommendation can apply for credits toward the apprenticeship. All such applications are evaluated on an individual basis.

The classroom training is arranged by Alberta Apprenticeship and Trade Certification and is currently being offered at the Northern Alberta Institute of Technology (NAIT) in Edmonton and the Southern Alberta Institute of Technology (SAIT) in Calgary. No fees are charged for the courses; however, supplies must be purchased by the apprentice. Income support for apprentices attending training courses may be provided by the Canada Employment and Immigration Commission. For more detailed information, contact your local Canada Employment Centre.

Upon successful completion of the apprenticeship, an apprentice is awarded an Alberta Completion of Apprenticeship Certificate and a Journeyman Proficiency Certificate. Graduate electronic technician apprentices who pass an approved interprovincial exam qualify for the Interprovincial Red Seal which means their trade qualifications are generally recognized throughout Canada.

Even after they have achieved journeyman status, electronic technicians must be willing to study to keep up to date with new developments and innovations in electronics. The nature of the work requires them to be painstakingly thorough, have the ability to concentrate for long periods of time, and be naturally curious about how things work. They also must be tactful and courteous when dealing with customers.

Employment and Advancement

Most electronic technicians, whether or not they are self-employed or work for others, work in repair shops that sell and/or service television sets, radios, and other electronic products. Some work for large organizations that use communications equipment such as police and fire departments, forestry agencies, transportation companies, and governments. The work is generally steady throughout the year. The current employment outlook for electronic technicians is better than for most occupations, but future demand is expected to be below the overall occupational average. Competition for training positions is keen and job applicants who already have training or experience in electronics have an advantage.

Many experienced electronic technicians set up their own businesses. Others advance to supervisory positions and/or transfer their skills to related fields such as business machine repair, computer servicing, or broadcasting technology.

Salary

Electronic technician apprentices earn 50% of the prevailing journeyman wage rate in that shop in the first year, 60% in the second, 70% in the third and 80% in the fourth year. The journeyman wage varies from one part of the province to another, and ranges from $8.00 to $18.00 an hour. Many shops pay electronic technicians on a commission rate (generally 40% to 60% of total labour billing) instead of paying an hourly rate.

Other Sources of Information

Associations and Unions

Alberta Society of Engineering Technologists,
Suite 1520, Royal Trust Tower, Edmonton Centre,
EDMONTON, Alberta, T5J 2Z2.

Printed Material

Electronic Technician Program booklets are available from your nearest Alberta Career Development Centre.

Occupational Information Monograph, *Radio and Television Service Technician*; Guidance Centre-OISE Press, 252 Bloor Street West, TORONTO, Ontario, Canada M5S 1V5.

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Occupational Profile
Alberta
CAREER DEVELOPMENT
AND EMPLOYMENT

INTERIOR DESIGNER AND INTERIOR DESIGN TECHNICIAN

Arts Occupations
3313-114

Interior designers and interior design technicians create attractive and functional interior spaces designed to meet the requirements of the people who work or live in them. Designers and design technicians differ in the extent of their education and responsibilities. Interior design technicians are graduates of two-year diploma programs who generally begin employment as assistants to interior designers or architects. They may become qualified as professional interior designers with additional education and/or several years of appropriate work experience.

Interior designers and assistants plan new premises or renovations to existing ones. In Alberta, they usually design interiors for offices, stores, shopping malls, hotels, restaurants, institutions, and homes.

Professional interior designers determine the scope of projects by analyzing their clients' needs, restrictions, preferences, and budgets. They then develop rough layouts and preliminary and final space plans which specify any changes in the physical structure, colour scheme, and arrangement of furniture. Final proposals include budgets and photographs and/or samples of the furnishings, fabrics, and wall and floor coverings. Once the client approves the plans, designers prepare working drawings giving the necessary specifications, including construction materials, finishes, draperies, and furnishing. They next supervise the bidding process and award contracts.

Designers work closely with general contractors ensuring that their drawings are interpreted correctly. They carefully inspect completed projects, noting any discrepancies between the installations and the plans and specifications. If there is no general contractor, they assume responsibility for the proper coordination of such tradespeople as carpenters and painters.

Interior designers' working conditions are varied. Business may be transacted in a client's office or home, in the designer's office, or at the work site. Work hours are sometimes long or irregular and may include weekends or evenings.

There is a difference between interior designers and interior decorators. Designers and technicians take a more architectural approach, stressing the shape, flow and function of interior space as well as its furnishings. Decorators do not plan or change structures. They are concerned with the colour and texture of items such as drapes, floor and wall coverings and furniture, and may specialize in one of these areas.

Qualifications

Designers work with architectural environments. They need to understand building construction and materials, specification writing, and technical drawing. They should have a good sense of line, proportion, and colour harmony. They must be able to combine their artistic talents with business and organizational skills. Designers are required to make accurate measurements and cost estimates and keep themselves informed about current buying procedures, sources, and prices. They also must know the building codes, zoning laws, and fire regulations that affect the areas in which they are working.

Most designers and technicians are graduates of four-year degree or two-year diploma programs. Decorators generally have not completed a formal course of study, are not accredited by a professional association, and receive lower salaries.

There are no degree programs for interior designers in Alberta. The following two-year diploma programs graduate qualified interior design technicians or assistants: Interior Design at Mount Royal College (Calgary); a second-year Interior Design option in the Architectural Technology Program at the Northern Alberta Institute of Technology (NAIT) in Edmonton;

and Interior Design Technology at Lakeland College (Vermilion). The basic entrance requirement for these programs is a high school diploma or adult status. Mount Royal College also requires screening, including pre-testing and the submission of a portfolio, with 30 words per minute typing skill recommended. The prerequisites for NAIT include a minimum 50 percent in Math 30, 32, 33, or 36, and credit in a Grade 12 science — physics (preferred), chemistry, or biology. Lakeland College requires a portfolio.

Four-year degree programs in Interior Design are offered at the University of Manitoba (Winnipeg) and Ryerson Polytechnical Institute (Toronto). The entrance requirement for the University of Manitoba is a complete grade 12 with appropriate levels of English and mathematics. Alberta applicants to Ryerson must have graduated from Grade 12 with an overall average of 60 percent or better.

Employment and Advancement

Professional interior designers are employed by design or architectural firms, office planning companies, design studios, contract sales departments in furniture or department stores, hotel or restaurant chains, and government planning offices. A limited number of designers become teachers of interior design or creative arts and crafts at the college or university level.

Graduates of the two-year diploma programs may begin employment as technicians or assistants in the types of companies mentioned previously. After a number of years of experience (usually five or more), and after successfully writing the NCIDQ (National Council of Interior Design Qualification) exams, they may be professionally accredited and registered as interior designers by the Interior Designers of Alberta. The NCIDQ exams are recognized internationally.

There has been a shortage of positions in Alberta for inexperienced design technicians. Some diploma graduates work as salespeople in department stores, home-furnishing outlets, building supply centers, office supply firms, and housing tract developments. These positions do not provide the type of experience necessary for accreditation by the Interior Designers of Alberta.

Interior designers, interior design technicians, or assistants working for design and architectural firms are usually supervised in their initial assignments; the amount of direction being determined by the individual's knowledge, experience, and dependability. Ultimately, advancement possibilities in these firms may be the same for fully-trained and accredited graduates of both diploma and degree programs.

Salary

The starting salary for an interior design assistant or technician ranges from $900 to $1,200 a month. The graduate of a four-year program usually begins at the same base salary as the technician, but may advance in his/her career at a faster rate.

Other Sources of Information

Contact People

Chairman, Interior Design Assistant Program,
Mount Royal College, 4825 Richard Road SW,
CALGARY, Alberta, T3E 5K6.

Principal Instructor, Interior Design Technology,
Northern Alberta Institute of Technology, 11762 –
106 Street, EDMONTON, Alberta, T5G 2R1.

Department Head, Design and Drafting Department,
Lakeland College, VERMILION, Alberta,
T0B 4M0.

Jostar Interior Ltd., 5204 – 86 Street,
EDMONTON, Alberta, T6E 5J5.

Tim Rhodes, Rhodes Renton Interior Design
Consultants Ltd., 200, 321 – 10th Avenue SW,
CALGARY, Alberta, T2R 0A5.

Associations

Interior Designers of Canada, 160 Pears Avenue,
TORONTO, Ontario, M5R 1T2.

Interior Designers of Alberta, 7515 – 142A Street,
EDMONTON, Alberta, T5R 0N5.

Printed Material

Occupational Information Monograph, *Interior Designer*, Guidance Centre, University of Toronto, 10 Alcorn Avenue, TORONTO, Ontario. M4V 2Z8.

Career Information Hotline

For further information on career planning, occupations, and educational programs, contact the Career Information Hotline at Zenith 22140 (in Edmonton call 422-4266).

1988

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Occupational
Profile

Alberta
CAREER DEVELOPMENT
AND EMPLOYMENT

LASER TECHNICIAN

Trades and Technical Occupations
8335-119

Laser technicians, also called electro-optical technicians, maintain and operate laser beam generating and handling equipment. Laser light has a wide variety of applications ranging from cutting hardest steel to the delicate cutting required in eye surgery. Lasers can be used to drill, weld, engrave, create visual displays, and identify objects such as Universal Product Code (UPC) symbols on grocery items at the supermarket or targets for military missiles. Accordingly, laser technicians' duties vary depending on their working environment.

In manufacturing, laser technicians work with laser equipment and robots which automate routine functions such as assembly-line welding, drilling, or cutting metal. Technicians employed by engineering consulting firms maintain equipment used to survey land or to direct the controls of equipment for digging tunnels. In hospitals, they maintain and calibrate the intensity and depth of penetration of laser beams to ensure that surgeons can rely on laser equipment during surgery. Laser technicians also service the equipment used to add up supermarket purchases and to check out books at some libraries.

Lasers are beams of light that can be generated by a glowing glass tube (lamp similar to a household fluorescent tube), directed and focussed by a combination of lenses and mirrors, and regulated by sophisticated electronic circuits. Because lasers tend to degenerate over time, laser technicians have to make adjustments to compensate for the gradual loss of beam power. Periodically, they take power readings, clean lenses and mirrors, align beams, and correct any problems they find. Troubleshooting problems in the electronic circuitry of laser equipment can take considerable time because each machine is unique. Even machines that are supposedly identical can produce very different results when in use. Laser technicians also set up or "retool" equipment and they may sometimes have to do some rewiring in order to attach specialized laser tools.

Laser technicians generally work in clean, well-lighted and ventillated surroundings. Their hours of work vary depending on the industry in which they are employed.

Qualifications

Laser technicians need above average problem-solving skills, electronic and mechanical aptitude, the ability to concentrate on detailed work, and the ability to make delicate adjustments.

There are presently no educational programs specifically designed to train laser technicians in Canada. Employers generally prefer to hire graduates of post-secondary educational programs in electronics and/or optics, or people with related work experience. Further training is on the job. At the time of writing, the Southern Alberta Institute of Technology (SAIT) in Calgary is proposing to offer a two-year Photonics Engineering Technology program as a specialization within the Electronics program. The entrance requirement for the Electronics program is a high school diploma or equivalent with at least a "C" standing in a Grade 12 mathematics and a Grade 12 English. Physics is recommended.

Employment and Advancement

Laser technicians are employed wherever laser equipment is used and serviced. There are a limited number of positions in the field now, but as new applications for laser technology are developed in industries such as agriculture, construction, engineering, and computer manufacturing, an increasing number of technicians will be required.

This occupation is a relatively new one and advancement paths are not clearly defined.

Salary

Wages for laser technicians vary greatly depending upon the industry, and the background knowledge and skills of technicians. Salaries range from $17,000 to $50,000 a year.

Other Sources of Information

Contact People

Program Director, Alberta Laser Institute,
9924 - 45 Avenue, EDMONTON, Alberta, T6E 5J1.

For further information on career planning, occupations and educational programs, contact the nearest Career Development Centre (see the "Government of Alberta" listings in the telephone directory) or telephone the Career Information Hotline at Zenith 22140 (in Edmonton call 422-4266). Hearing impaired individuals can reach the Hotline by calling 1-800-232-7215 for message relay (in Edmonton call 422-5283).

1989

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Occupational Profile

Alberta
CAREER DEVELOPMENT
AND EMPLOYMENT

MATERIALS ENGINEERING TECHNOLOGIST

Architecture, Environmental Planning, Engineering and Related Technologies Occupations
2165-146

Materials engineering technologists use their knowledge of the specific properties and behaviours of a wide range of materials to assist engineers in selecting the best materials for particular industrial and engineering uses. Technologists use their specialized skills to develop, test, and inspect metals such as iron, steel, copper, and alloys; non-metals such as concrete, asphalt, soil, and wood; and synthetic materials such as plastic, rubber, fiber composites, and ceramics for the special qualities that determine their suitability for particular uses.

Materials engineering technologists perform both mechanical and nondestructive testing. They test materials mechanically for tensile strength, compression, impact resistance, hardness, and fatigue, using a variety of tools and equipment. In non- destructive testing, technologists use x-ray and gamma-ray equipment to detect cracks, foreign substances, and any other internal defects in materials that may affect their performance and lifespan. They also use several other non-destructive test methods including ultrasonics, eddy current, magnetic particle, and liquid penetrants.

Technologists must also be knowledgeable about corrosion prevention methods including metallurgical treatment techniques, coatings, and corrosion inhibitors. Technologists perform analytical investigations to identify various forms of corrosion and their causes. Basing recommendations on technical and economic factors, technologists recommend and select specific materials to be applied to prevent corrosion, and then test the treated materials.

Qualifications

Materials engineering technologists should have an interest in working with processes and equipment. Good interpersonal skills are required to be able to work effectively and cooperatively as part of a technical or engineering team.

The minimum educational requirement for working as a materials engineering technologist is a diploma in Materials Engineering Technology. The Northern Alberta Institute of Technology (NAIT) in Edmonton offers a two-year diploma program in Materials Engineering Technology. The educational prerequisites include an Alberta high school diploma with English 30 or 33; Math 30 or 33; and Physics 30, Chemistry 30, or Biology 30. Mature students may be admitted with different qualifications.

After gaining suitable work experience, in various nondestructive testing techniques, graduates of the Materials Engineering Technology program are eligible to write the Canadian General Standards Board Examinations for certification in Radiography, Ultrasonics, Magnetic Particle and Dye Penetrant Testing.

After two years of successful experience in industry, a graduate may seek certification with the Alberta Society of Engineering Technologists (ASET). Student memberships to ASET are available to undergraduates. In Alberta, the Alberta Society of Engineering Technologists certifies individuals as technicians and technologists, accepting as members only those who meet their requirements of education and experience. Because standards are high, membership in the association is often used by employers and governments as a guarantee of competence. The designation, "CET" (Certified Engineering Technologist), can be used only by members of ASET and associations in other provinces which are constituent members of the Canadian Council of Engineering Technicians and Technologists (CCETT). Students may also join such other technical societies as ASM International (a society for engineering materials), National Association of Corrosion Engineers, or the Society of Manufacturing Engineers.

Employment and Advancement

Materials engineering technologists find employment in organizations of all sizes and in all environments ranging from offices and laboratories to the out-of-doors. They can be found working in the materials manufacturing business (producing steel, nickel, cobalt, plastics, concrete), in the equipment manufacturing business (producing pressure vessels, pipeline, oil field equipment, mining equipment, electronics components), and in industrial services used by the processing industry (providing services in non-destructive inspection, corrosion testing and control, failure investigations, materials testing). They may also find employment in government and university materials-testing laboratories, in technical sales, or as part of the quality assurance group within chemical or oil processing industries.

Graduates who demonstrate personal initiative and excellence in their work may progress to supervisory and managerial positions.

It is expected that there will be a continuing demand for materials technologists in Alberta, particularly in the field of advanced materials.

Salary

Starting salaries for materials engineering technologists are competitive with technologists' salaries in other programs. Positions which require field work or travel often have excellent pay. The starting salaries range from $18,000 to $20,000. With experience, a technologist's salary may reach $40,000.

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Other Sources of Information

Contact People

Executive Director, Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T2J 2Z2.

Program Head, Materials Engineering Technology, Northern Alberta Institute of Technology, 11762–106 Street, EDMONTON, Alberta, T5G 2R1.

Associations

Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Canadian Council of Technicians and Technologists, 807, 880 Wellington, OTTAWA, Ontario, K1R 6K7.

Printed Material

ASET (brochure), Alberta Society of Enginee Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Technology Alberta (journal), Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Why Engineering Technology? Why Not? (pamphlet), Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Career Information Hotline

For further information on career planning, occupations, and educational programs contact the Career Information Hotline at Zenith 22140 (in Edmonton call 422-4266).

1988

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Occupational Profile

Alberta
CAREER DEVELOPMENT
AND EMPLOYMENT

PETROLEUM ENGINEERING TECHNOLOGIST

Architecture, Environmental Planning, Engineering
and Related Technologies Occupations
2165-266

Petroleum engineering technologists are responsible for many of the technical duties involved in the production of oil and gas from conventional reserves, as well as from heavy oil and oil sands. Their knowledge and training is applied to petroleum drilling, production procedures, formation evaluation, and reservoir engineering.

Petroleum engineering technologists, along with petroleum engineers, are primarily involved in production design, reservoir studies, or in production operations. They design equipment and procedures necessary for the production of oil and gas, calculate and compile production statistics from various tests required for the evaluation of both projects and procedures, and specify the particular measures and techniques that should be used in dealing with various production issues and concerns.

Technologists generally assist engineers in directing the work required in assembling the mechanical and electrical testing instruments used at the well-site, in measuring and recording pressures and temperatures at various depths, and in analyzing the mud that is circulated through boreholes during drilling operations. They take readings from various pressure and temperature instruments and make preliminary interpretations of the data gathered for use by engineers in their evaluations of the potential flow and size of the hydrocarbon reserves. Technologists also record data from depth and formation tests, and calculate the optimum consistency of mud required for different drilling conditions. Technologists may become involved in designing well completions (including casing designs, and cementing volumes and pressures); gas dehydration and hydrate suppression equipment; surface equipment such as separators, treators, and storage vessels for gas gathering facilities; and artificial lift systems for boosting production. They may also be responsible for making calculations regarding such production aspects as well deliverability, hydrocarbon reserves (through volumetric, material balance, and decline curve analysis), and the economic viability of various projects or procedures. Making recommendations regarding specific techniques for removing solids and water from the oil, or for increasing well production through the use of appropriate well stimulation techniques (acidizing, or hydraulic fracturing) is also part of their job. Correlating well logs, or operating production facilities for gas gathering and crude oil treatment may also be their responsibility.

Qualifications

Petroleum engineering technologists must be able to understand and apply engineering principles to the research and design of equipment and processes essential in the development and production of oil and gas from various sources.

Technologists need to have good verbal and written communications skills to effectively communicate the technical information they obtain through their calculations and evaluations. An aptitude for the sciences, particularly chemistry and physics, and mathematics is required.

A technical diploma in petroleum engineering is the minimum educational qualifications required to work as a petroleum engineering technologist. The Northern Alberta Institute of Technology (NAIT) in Edmonton, offers such a two-year program. Educational prerequisites for the program include an Alberta high school diploma with English 30 or 33, Math 30 or 33, and Physics 30 or 32, or Chemistry 30. A good background in physics is recommended. Students in this program receive extensive training in computer-aided engineering to develop skills in computer operation and in programming design. Graduates of the petroleum engineering technology program may challenge the Boiler's Branch examinations to obtain a Fourth Class Power Engineering certificate.

After two years of successful work experience in industry, the graduate may seek certification with the Alberta Society of Engineering Technologists (ASET). Student memberships in ASET are also available. In Alberta, ASET certifies individuals as technicians and technologists. They accept as members only those who meet their requirements of education and experience. Because their standards are high, membership in the association is often used by employers and governments as guarantees of competence. The designation, CET (Certified Engineering Technologist) can only be used by members of ASET and other provincial associations which are constituent members of the Canadian Council of Engineering Technicians and Technologists (CCETT).

Employment and Advancement

The field of petroleum engineering technology provides diverse opportunities and good incomes. Technologists may work in a variety of jobs related to oil and gas production and reservoir analysis. Potential employers are oil, gas, and resource companies; engineering consulting firms; and petroleum service companies. Most major employers are located in Western Canada. Opportunities for advancement include supervisory positions in field offices and in production operations, or managerial positions with engineering firms.

Salary

The beginning salary for petroleum engineering technologists is in the range of $22,000 to $25,000 per year. Experienced technologists may earn $38,000 per year.

Other Sources of Information

Contact People

Executive Director, Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Program Head, Petroleum Engineering Technology program, Northern Alberta Institute of Technology, 11762–106 Street, EDMONTON, Alberta, T5G 2R1.

Associations

Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Canadian Council of Technicians and Technologists, 807, 880 Wellington, OTTAWA, Ontario, K1R 6K7.

Printed Material

ASET (brochure), Alberta Society of Engine[illegible] Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Technology Alberta (journal), Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Why Engineering Technology? Why Not? (pamphlet), Alberta Society of Engineering Technologists, 1520 Royal Trust Tower, Edmonton Centre, EDMONTON, Alberta, T5J 2Z2.

Career Information Hotline

For further information on career planning, occupations and educational programs, contact the Career Information Hotline at Zenith 22140 (in Edmonton call 422-4266).

1988

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Occupational Profile

Alberta
CAREER DEVELOPMENT
AND EMPLOYMENT

SURVEY TECHNOLOGIST

Architecture, Environmental Planning, Engineering
and Related Technologies Occupations
2161-118, -122

Survey technologists conduct field surveys under the supervision of professional engineers or professional land surveyors. By using modern surveying and mapping instruments and equipment they are able to obtain, interpret, and record information about a specific geographic area and its features. Surveying information is determined from angular and linear measurements that relate to the position of particular points on, above or below the earth's surface. Microcomputers and computer-aided design and drafting systems are used to compute and plot survey-related data. In addition to understanding the scientific and mathematical principles that apply to surveying work, technologists must also have a basic knowledge of the legal implications of surveying work as it applies to the establishment of boundaries and property lines.

In engineering surveys, technologists are responsible for staking out sites for large buildings and structures such as bridges, dams, tunnels, and other engineering works. They may have to do calculations and field layouts of horizontal, vertical and spiral curves when conducting detailed site-surveys for projects such as highways and railways. In mine surveying, technologists conduct underground, open pit, and tunnel surveys, and produce mine plans. They may also carry out hydrographic surveys to determine subsurface contours and the existence of underground water systems.

Technologists are also involved in surveying for subdivisions, roads, rights-of-way, mineral claims, and oil well sites. In this area of work they must apply and adhere to the guidelines and provisions of the Legal Survey Acts and Regulations. Under supervision, survey technologists may conduct field surveys for new townships and sections of land to establish or re-establish legal survey boundaries. They search titles and obtain legal survey plans from the provincial Land Titles office.

Qualifications

Those aspiring to work as survey technologists should enjoy outdoor work and travelling. Many surveying projects take place in remote and rugged areas. Technologists must have aptitudes for applied science and mathematics as surveying is based on the practical application of the physical sciences. The ability to draw and letter neatly is an asset as the technologists' work involves producing proper field notes, maps, and plans.

The minimum educational requirement for working as a survey technologist is a diploma in Surveying Technology. The Northern Alberta Institute of Technology (NAIT) in Edmonton offers a two-year diploma program in Surveying Technology. The prerequisites for entrance into the program include an Alberta high school diploma with credit in English 30 or 33; Math 30 or 33; and Physics 30, Chemistry 30 or Biology 30; or successful completion of the Pre-Technology program at NAIT. The Southern Alberta Institute of Technology (SAIT) in Calgary also offers a two-year Surveying Technology program with specializations in photogrammetry and surveying. Entrance requirements include an Alberta high school diploma with Grade 12 English, and a minimum 50 percent mark in a Grade 12 mathematics and science, or the successful completion of the Pre-Careers program at SAIT. Mature students may be admitted to these programs with lesser qualifications.

The Alberta Vocational Centre in Grouard offers a fifteen-week Survey Technical Aide (Survey I) program and a sixteen-week Survey Technician (Survey II) program. These programs are designed to equip students with the specific introductory level skills required by government departments and survey companies, and to provide training in basic surveying procedures and equipment usage. Applicants to the Survey I program must be at least 17 years of age, with Grade 11, including Mathematics 21 or 25. Successful completion of the Survey I program is the prerequisite for Survey II.

After two years of successful work experience in industry, a graduate may seek certification with the Alberta Society of Engineering Technologists (ASET). Student memberships in ASET are also available. The Alberta Society of Engineering Technologists certifies individuals as technicians and technologists, accepting as members only those who meet their requirements of education and experience. Because standards are high, membership in the association is often used by employers and governments as an indication of competence. The designation "CET" (Certified Engineering Technologist) can be used only by members of ASET and other provincial associations which are constituent members of the Canadian Council of Engineering Technicians and Technologists (CCETT).

Employment and Advancement

Surveying technologists are employed by engineering and legal survey firms, oil and coal companies, government departments, and utility companies. Other potential employers include transportation, forestry, and hydrography departments, as well as construction companies. Survey technologists can advance to supervisory positions where they are responsible for other technologists.

Salary

The beginning salary for a survey technologist is in the range of $15,000 to $20,000. An experienced technologist can earn up to $35,000.

Other Sources of Information

Contact People

Executive Director, Alberta Society of Engineering Technologists, 1520 Royal Trust Tower,
Edmonton Centre, EDMONTON, Alberta,
T5J 2Z2.

Program Head, Surveying Technology Program,
Northern Alberta Institute of Technology,
11762–106 Street, EDMONTON, Alberta,
T5G 2R1.

Program Supervisor, Surveying Technology Program, Southern Alberta Institute of Technology, 1301–16 Avenue, N.W., CALGARY,
Alberta, T2M 0L4.

Associations

Alberta Society of Engineering Technologists,
1520, Royal Trust Tower, Edmonton Centre,
EDMONTON, Alberta, T5J 2Z2.

Alberta Society of Surveying and Mapping
Technologists, 114, 14315–118 Avenue,
EDMONTON, Alberta, T5L 4S6.

Canadian Council of Technicians and
Technologists, 807, 880 Wellington, OTTAWA,
Ontario, K1R 6K7.

Canadian Institute of Surveying and Mapping,
Box 5378, Station "F", OTTAWA, Ontario,
K2C 3J1.

Printed Material

Taking The Measure of Canada (pamphlet), The Canadian Institute of Surveying and Mapping,
Box 5378, Station "F", OTTAWA, Ontario,
K2C 3J1.

The Canadian Surveyor, The Canadian Institute of Surveying and Mapping, Box 5378, Station "F",
OTTAWA, Ontario, K2C 3J1.

Why Engineering Technology? Why Not? (pamphlet), Alberta Society of Engineering Technologists, 1520, Royal Trust Tower,
Edmonton Centre, EDMONTON, Alberta,
T5J 2Z2.

Career Information Hotline

For further information on career planning, occupations, and educational programs contact the Career Information Hotline at Zenith 22140 (in Edmonton call 422-4266).

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APPENDIX E

INSTRUCTOR'S INFORMATION

You may wish to send a letter to participants confirming workshop attendance, as well as pre-workshop information such as resource material and relevant newspaper clippings. This should be mailed at least two weeks prior to the workshop.

SAMPLE LETTER:

Dear ____________________,

This is to confirm your registration in *Opening Doors to the Trades and Technologies,* which is being offered on _______________ and __________________ from ___________ to _________. The workshop will be held at _______________________________.

This workshop will focus on broadening knowledge of the trades and technologies, disadvantaged groups, demographic and labour market trends, barriers to training and employment, and effective strategies to overcoming barriers. In preparation for the workshop, please read the enclosed material(s), plus give thought to any concerns you may have, plus strategies you have used, in working with individuals who are disadvantaged in the workplace. This workshop will provide an opportunity to share ideas and experiences with other career advisors.

If you have any questions, please contact _______________________.

Yours sincerely,

RESOURCE MATERIALS

The following materials are recommended for use in conducting the workshop. If they are not available through your local Career Development Centre, they may be obtained by contacting:

Access Initiatives Branch
Alberta Career Development and Employment
City Centre, 10th Floor
10155 - 102 Street
Edmonton, Alberta
T5J 4L5
(403) 427-8765 or RITE 142-8765

BOOKLETS AND BROCHURES:

- *Alberta's Apprenticeship Program*
- *Apprenticeship Opportunities*
- *Focus on Abilities*
- *In Praise of Older Workers*
- *Labour Market Trends and Human Resource Issues*
- *The Leading Force*

POSTERS:

These posters promote the participation of disadvantaged groups in the trades and technologies:

- *Equal to the Job*
- *Professional by Trade*
- *Today's Employers Know a Good Investment When They See One*

VIDEO CASSETTES:

The video cassettes are available for borrowing from:

Legislative and Library Services
Alberta Career Development and Employment
9th Floor, CityCentre
10155 - 102 Street
Edmonton, Alberta
T5J 4L5
(403) 422-4752 or RITE 142-4752

CIS-C046 ***HANDS ON***
13 minutes 1988 1/2" VHS
Alberta Career Development and Employment
Apprenticeship and Trade Certification Branch.

Explains the Alberta Apprenticeship and Trade Certification Program and encourages training in the trades.

CIS-C054 ***PLAYING IT STRAIGHT***
15 minutes 1989 1/2" VHS
Employment Services for the Physically Handicapped.

The video discusses employment of persons with physical disabilities. It dispels myths regarding employment potential and places emphasis on abilities rather than disabilities.

CIS-C055 ***THE JOB HUNT - NEW OPPORTUNITIES***
15 minutes 1989 1/2" VHS
Alberta Career Development and Employment.

This video deals with common problems persons from various back-grounds may encounter when trying to enter the labour market. It outlines job search and interview techniques for today's job seekers through vignettes. Designed to motivate individuals with high school education or less who may have been unsuccessful in attempting to find meaningful employment.

CIS-W043 ***WOMEN IN CONSTRUCTION - The Tomorrow Builders***
13 minutes 1989 1/2" VHS
TOPEK Productions.

This video was produced for the Canadian Construction Association. This video portrays interviews with women, how they started in construction, the skills needed and their feelings about working in a non-traditional industry. The video can be used in schools and workshops to encourage women to consider work in a non-traditional occupation.

INSTRUCTOR'S NOTES – Reference Materials

ABORIGINAL PEOPLES

Anderson, David; Bostrom, Harry; Frideres, James; Price, John. The Dynamics of Government Programs for Urban Indians in the Prairie Provinces, Montreal Institute for Research on Public Policy, 1984.

Basic Information on Aboriginal Peoples, Indian and Northern Affairs Canada, 1987.

Brecher, Tom; Gauvin, Pierre; Klein, Sheila; Larocque, Gilles. 1981 Census Highlights on Registered Indians: Annotated Tables, Indian and Northern Affairs Canada, 1985.

Siggner, Andrew J. "The Socio-demographic Condition of Registered Indians," Canadian Social Trends, Winter 1986.

WOMEN

Alberta Women's Secretariat, Economic and Social Profile of Alberta Women, Alberta, March 1986.

Costuras, Aureene and Weber, Delores, Statistical Report: Women in the Alberta Labour Market. Women in Education and Employment Training in Alberta, Alberta Career Development and Employment, September, 1987.

Labour Canada, Women in the Labour Force, 1987.

Statistics Canada, Women in the Workplace, 1987.

PERSONS WITH DISABILITIES

Alberta Career Development and Employment, Canadians and Albertans with Disabilities, August, 1988.

Gower, David, Employment of Disabled Canadians, Canadian Social Trends, Summer 1988.

Holmes, Patricia, "There are no Handicapped", Canadian Labour, June 29, 1979, (8-12).

VISIBLE MINORITIES AND IMMIGRANTS

Employment and Immigration, *Profile of Canadian Immigration*, 1987.

Employment and Immigration, *Employment and Employment Training for Immigrant Women,* 1985.

Employment and Immigration, *Family Class Immigrants to Canada, 1981-1984: Labour Force Activity Aspects,* 1985.

Statistics Canada, *A Nation of Immigrants,* August, 1984.

OLDER WORKERS

Older Workers: An Imminent Crisis in the Labour Market, Canada Employment and Immigration Advisory Council, August, 1985.

Training Older Persons for Employment: The Job Training Partnership Act, American Association of Retired Persons, 1983.

YOUTH

Bibby, Reginald, Posterski, Donald, *Canada's Youth "Ready for Today"*, The Canadian Youth Foundation, 1987.

Interdepartmental Education Committee on the Transition Needs of Native Students, "Transition Needs of Native Students", July 12, 1989.

INSTRUCTOR'S CHECKLIST

Opening Doors To The Trades And Technologies

Focus On ______________________________

Participants __________________________

____

____

____

____

____

____

____

____

____

Summary Outline ________________

Date ________________________

Time __________ *to* ______________

Place ________________________

____

______ *Room reserved*

______ *Pre-workshop information*

______ *Prepared*

______ *Sent*

Equipment

- ______ Overhead projector
- ______ Spare lamp
- ______ Screen
- ______ VHS and television
- ______ Flipchart
- ______ Extension cord
- ______ Marking pens

Room Layout

Beverages

- ______ Coffee
- ______ Juice
- ______ Cream
- ______ Cups
- ______ Tea
- ______ Sugar
- ______ Napkins
- ______ Stir sticks

Handouts

- ______ #01 - Glossary of Terms
- ______ #02 - A Guide to Apprenticeship
- ______ #03 - A Guide to the Technologies
- ______ #04 - Trends
- ______ #05 - Morning Energizer
- ______ #06 - Myth or Reality
- ______ #07 - Generic and Specific Barriers
- ______ #08 - Strategies
- ______ #09 - Implementing Strategies
- ______ #10 - Evaluation

Supplies

- ______ 3 X 5 inch cards
- ______ Flipchart paper
- ______ Note pads
- ______ Pencils

Videos

- ______ Hands On
- ______ Playing it Straight
- ______ The Job Hunt
- ______ Women in Construction

Resource Materials

______ Alberta's Apprenticeship Program
______ Apprenticeship Opportunities
______ Focus on Ability
______ In Praise of Older Workers
______ Labour Market Trends and Human Resource Issues
______ The Leading Force

Transparencies

______ #01 Purpose
______ #02 Objectives
______ #03 Career, Occupation, Job
______ #04 Disadvantaged Groups
______ #05 Aboriginal People of Canada
______ #06 Persons with Disabilities
______ #07 Visible Minorities/Immigrants
______ #08 Older Workers/Youth
______ #09 Demographic and Labour Market Trends
______ #10 Alberta's Population Distribution: 1966
______ #11 Alberta's Population Distribution: 1986
______ #12 Alberta's Population Distribution: 2006
______ #13 The Middle Aging of the Labour Force
______ #14 Aboriginal Peoples
______ #15 Aboriginal Apprentices
______ #16 Women
______ #17 Percentage of Women in Alberta's Labour Force
______ #18 Occupational Grouping of Women
______ #19 Female Journeymen in Alberta
______ #20 Female Apprentices in Alberta
______ #21 Occupational Grouping of Female Apprentices
______ #22 Persons with Disabilities
______ #23 Separating Fact from Fantasy
______ #24 Visible Minorities and Immigrants
______ #25 World Areas: 1977
______ #26 World Areas: 1987
______ #27 Older Workers
______ #28 Youth
______ #29 Youth Share of the Labour Force
______ #30 Attitudinal Barriers Limit Opportunities
______ #31 Overcoming Attitudinal Barriers
______ #32 Generic Barriers to Success
______ #33 Visible Minorities and Immigrants
______ #34 Persons with Disabilities
______ #35 Aboriginal Peoples
______ #36 Women
______ #37 Older Workers
______ #38 Linkages
______ #39 Summary